THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER CAM-1 DEW LINE SITE

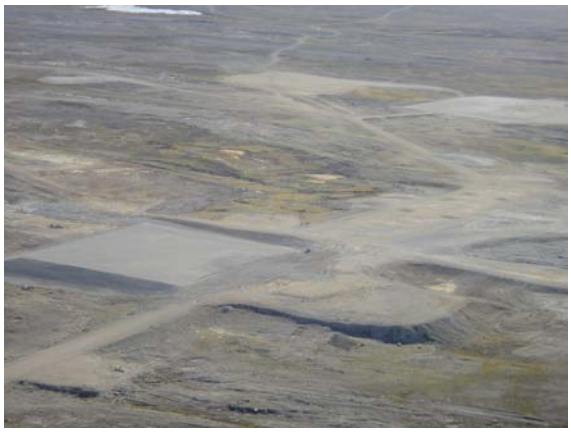
Jenny Lind Island, Nunavut

DRAFT REPORT– 2011 SEASON

(O/Ref.: CD9229) (Y/Ref.: DLC MON (Kitik 09)

DEFENCE CONSTRUCTION CANADA

November 2011



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DEFENCE CONSTRUCTION CANADA

November 2011

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

1.1 LOCATION AND SITE FEATURES

The CAM-1 Jenny Lind Island DEW Line site is located on the east central side of Jenny Lind Island within the Queen Maud Gulf in Nunavut 68º 40' 17" N and 101º 43' 39" W. The site is located approximately 140 kilometres southeast of the community of Ikaluktutiak (Cambridge Bay).

The CAM-1 site is a former auxiliary radar site within the original DEW Line system that was operated until the early 1990s, when it was decommissioned and replaced with a remotely operated Short Range Radar (SRR) station as part of the North American Aerospace Defence Modernization Program. CAM-1A was constructed approximately 12 km west of the site. The environmental cleanup and demolition of facilities commenced in 2007 and was completed in summer of 2009.

Liquid and solid waste materials from the environmental cleanup remain in a temporary storage area near the shoreline.

The clean-up included the closure and remediation of eight existing landfills, the construction of a landfill for the disposal of non-hazardous wastes generated from demolition, the collection of site debris (NHWLF) and the construction of a second facility to contain Tier II soils. Monitoring activities were carried out at the following landfill areas, as shown on the overall site plan (Figure CAM-1.1) at the end of this section:

- Borrow Area North Landfill
- Northeast Landfill
- Station West Landfill
- Non-Hazardous Waste Landfill
- Tier II Soil Disposal Facility
- Southeast Landfill
- Station East Landfill
- Main Landfill
- USAF Landfill
- East Landing Landfill

In accordance with the NTI-DND Cooperation Agreement, landfill monitoring is carried out following the site clean-up. Table I hereafter provides a synopsis of field activities performed during the 2011 Landfill Monitoring Program at CAM-1 – Jenny Lind Island.

Table I: 2011 Monitoring Requirements for CAM-1 Landfills

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Borrow Area North Landfill	✓			
Northeast Landfill	✓			
Station West Landfill	✓			
Non-Hazardous Waste Landfill	✓			
Tier II Soil Disposal Facility	✓	✓	✓	✓
Southeast Landfill	✓			
Station East Landfill	✓			
Main Landfill	✓			
USAF Landfill	✓			
East Landing Landfill	✓			

1.2 OBJECTIVES AND SCOPE OF WORK

The objective of the DCC Landfill Monitoring Program is to collect sufficient information to assess the landfill's performance from geotechnical and environmental perspectives. DCC has specified the requirements for the Landfill Monitoring Program in the document *Terms of Reference (ToR) – Consulting Services for the Collection of Landfill Monitoring Data – PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-2 Shepherd Bay, and CAM-4 Pelly Bay DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION DCC PROJECT #: DLC MON*, October 7, 2008. (ToR, reference B).

The scope of work for the Landfill Monitoring Program is defined in the ToR and in Biogenie's accepted proposal dated April 2009 (reference C) that was submitted to DCC. The scope of work generally includes the following activities:

- Landfill Monitoring for each of the CAM-1 Landfills
- Visual inspection
- Soil and groundwater sampling (Tier II Soil Disposal Facility)
- Thermal monitoring (DCC Tier II Soil Disposal Facility)
- Creation of a photographic record
- Draft and Final reports

1.3 REPORT FORMAT

This report describes the work carried out in August 2011 at ten landfill sites at CAM-1 Jenny Lind Island. Results from soil and groundwater sampling, thermal monitoring, and visual inspection of the sites are

also presented in the formats described in the ToR. An electronic version of the report and its component tables, figures and data files is included in an Addendum DVD-ROM, which is appended to the report.

The report is organized with a separate chapter for each of the landfill areas. Each chapter contains all relevant information gathered for that landfill during the 2011 Landfill Monitoring Program. The following information is provided for each landfill:

- Visual inspection check-list
- Visual inspection drawing mark-up
- A selection of visual inspection photos
- Thermal monitoring summary (where applicable)
- Summary of 2011 soil analytical data (where applicable)
- Summary of 2011 groundwater analytical data (where applicable)
- Monitoring well development/sampling reports (where applicable)

For the photographic record, the printed copy of the report only includes an index and thumbnail image of photos for each of the landfill areas. The actual photos are included in electronic format in the Addendum DVD-ROM to the report. Certificates of Analysis, QA/QC analytical results and field notes are attached in appendices.

1.4 PROJECT REFERENCES

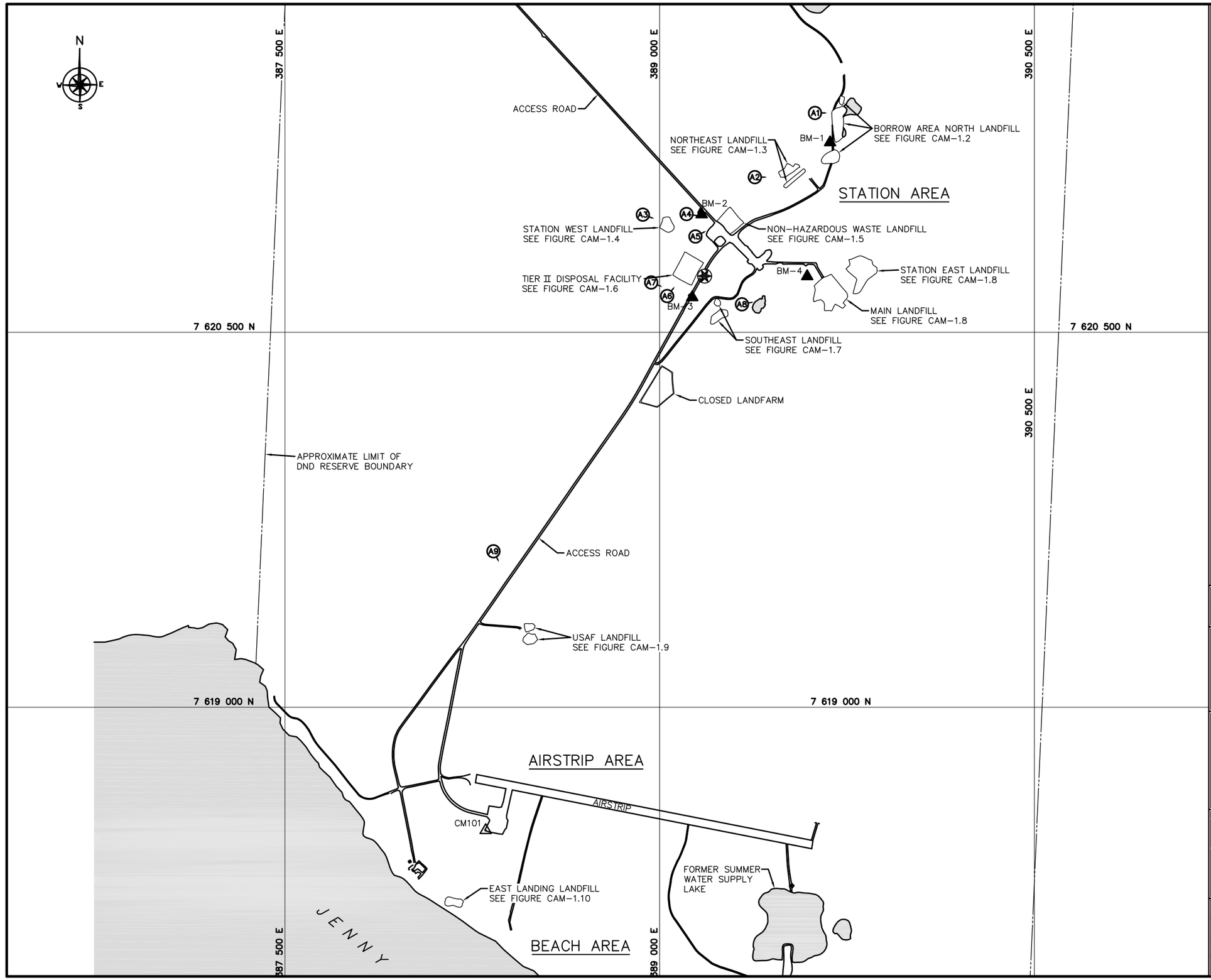
The following references are specifically relevant to the 2011 Landfill Monitoring activities:

A. *Request for Abbreviated Proposal- Consultant Services – Collection of Landfill Monitoring Data for the DEW Line Sites: PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay, Nunavut Territory - Kitikmeot Region. DCC Project # DLC MON (Kitik 09)*, February 19, 2008.

B. *Terms of Reference – Consulting Services for the Collection of Landfill Monitoring Data – PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION DCC PROJECT #: DLC MON*, October 7, 2008.

C. Technical Proposal – The Collection of Landfill Monitoring Data for the DEW Line Sites: *PIN-3 Lady Franklin Point, PIN-4 Byron Bay, CAM-1 Jenny Lind Island, CAM-2 Gladman Point, CAM-3 Shepherd Bay, and CAM-4 Pelly Bay DEW LINE SITES, Kitikmeot Region, Nunavut. Project Ref 6121-060,* February 2009.

D. *Post-Field Progress Report, CAM-1 Landfill Monitoring 2011*, August 26, 2011.



LEGEND

- CM101 — SURVEY CONTROL MONUMENT
- BM-1 — PERMANENT BENCHMARK LOCATION (4)
- COMMEMORATIVE PLAQUE LOCATION
- APPROXIMATE LOCATION OF PROPERTY BOUNDARY
- BODY OF WATER
- A1 — AERIAL PHOTOGRAPH

0 150m 300m 450m 600m 750m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11-11-01	P.L.	J.M.G.	J.P.P.

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COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

LOCATION PLAN

SITE REMEDIATION SOLUTIONS

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MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 15,000	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL-GAGNON	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.1-PL	PAGE PL

FIGURE CAM-1.1

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2 OUTLINE AND METHODOLOGY

2.1 FIELD PROGRAM STAFF

The 2011 on-site field program at CAM-1 Jenny Lind Island took place from August 13 to 14, 2011. Biogenie sub-contracted Sila Remediation Inc. from Igloolik, Nunavut to perform the field work. The Sila field program was executed by Mr. Andrew Passalis and two local Inuit representatives.

The team was made up of the following individuals:

- Andrew Passalis, Project Engineer
- Susie Koaha, Field Technician
- Joe Koaha, Wildlife Monitor

2.2 2011 WEATHER CONDITIONS

Seasonally warm weather conditions were observed during the CAM-1 Jenny Lind Island monitoring event with daytime temperatures ranging between 6-8ºC upon arrival on August 13 and 14 and warming up to a daytime high of 12ºC on August 13. Skies were generally clear with moderate to light winds out of the northwest ranging between 30-40 km/h in the morning and calming to less than 10 km/h in the late afternoon on the 13. No precipitation was observed during the monitoring event.

2.3 VISUAL INSPECTION

Data and information collected during the visual inspection of the CAM-1 landfills are included in the visual inspection datasheets. These data sheets include such inspection data as the location of settlement, erosion, frost action, sloughing and cracking, animal burrows, vegetation cover and stress, staining, seepage points, exposed debris, and any other features of note.

Each feature was identified with an alphabetical tag to be used consistently each year in an effort to track changes in condition for each specific feature. New features are added to the checklist and are noted as new observations. This letter is shown on the figures for each landfill along with the symbol for the particular feature.

Digital photos with a measure of scale were taken to show the actual general state of the landfills as well as features of interest. Annotated sketches/diagrams are included in the present report for each landfill. Some photos are provided for supplemental purposes only and do not warrant placement on the Figures (i.e., they are not specifically referenced in the report or within the tables).

The photos were taken with a Sony DSC-TX5 10.2 megapixel (MP) digital camera. Full resolution digital jpg copies are furnished on a DVD-ROM appended with the final report. The photo log, including the local coordinates from where the photo was taken, orientation (relative to map north), feature of note and picture numbers are included with each landfill report.

2.4 SOIL SAMPLING

The soil sampling methodology conformed to guidance provided in the following Canadian Council of Ministers of the Environment (CCME) documents:

- CCME Guidance Document on the Management of Contaminated Sites in Canada, April 1997, CCME PN 1279. (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf)
- CCME EPC-NCS62E Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites - Volume I: Main Report, Dec 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf)
- CCME EPC-NCS66E Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites - Volume II: Analytical Method Summaries, Dec 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf)
- Reference method for the Determination of Petroleum Hydrocarbons in Soil – Tier I Method, 2001
- CCME Subsurface Assessment Handbook for Contaminated Sites, March 1994, EPC-NCSRP-48E (http://www.ccme.ca/publications/ceqg_rcqe.html)

For the 2011 monitoring event, 4 soil-sampling stations were visited. One surface sample (0-15 cm depth below surface) and one subsurface sample (40-50 cm depth below surface) were taken at each sampling station. No frozen ground or frost was encountered at the soil stations during the August 2011 sampling.

As specified in the ToR, the following soil sampling procedures were adhered to:

- Where required, the soil samples were collected from locations between two to four meter radius of the monitoring wells
- Blind field duplicates (10 %) were collected for Quality Assurance and Quality Control purposes
- Duplicate samples (10 %) were also taken and sent to a second laboratory for quality control purposes
- An additional 10 % of soil samples taken were sent to the owner's representative (ESG OPS CENTRE) in Kingston for archiving as specified by DCC

The soil samples were analyzed for the requested parameters (TPH (F1-F3), total metals and PCBs) as specified by DCC. Table II below summarizes the soil sampling at CAM-1 during the August, 2011 field program.

Table II: Summary of Soil Sampling at CAM-1 – August 2011

Landfill Site	**Soil Sample Locations**			
Tier II Soil Disposal Facility	MW-5	MW-6	MW-7	MW-8

Notes:
Soil samples annotated as "MW" were collected as per the ToR between 2-4 metres from monitoring wells.
All soil samples were collected from two depths (0-15 cm and 40-50 cm). For 2011 sampling, total no. of soil samples = 11 samples (4 locations x 2 depths + 1 QA/QC + 1 (Inter-laboratory comparison) + 1 for Owner's Representative (ESG Archives)

The soil sampling methodology conformed to guidance provided in the following Canadian Council of Ministers of the Environment (CCME) documents:

- CCME EPC-NCS62E Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites - Volume I: Main Report, Dec 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf)

- CCME EPC-NCS66E Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites - Volume II: Analytical Method Summaries, Dec 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).

2.5 GROUNDWATER SAMPLING

The 2011 field program included the monitoring of 4 locations at CAM-1. All four wells at the Tier II Soil Disposal Facility were dry at the time of monitoring and consequently could not be sampled. Table III summarizes the status of the monitoring wells and the attempts made.

In sampled wells, no sign of free phase hydrocarbon product was detected. Monitoring Well Development and Sampling Record forms are included in appropriate sections of this report.

Table III: Summary of Groundwater Sampling at CAM-1 – August 2011

Landfill Site	**Groundwater Sample Locations**			
Tier II Soil Disposal Facility	MW-5 (dry)	MW-6 (dry)	MW-7 (dry)	MW-8 (dry)

Notes:
All monitoring wells were inspected and found to be in good condition with no significant concerns identified.

2.6 THERMAL MONITORING

All thermistors at the Tier II Soil Disposal Facility were inspected and found to be in good condition with no significant concerns identified. Data from all thermistors was successfully retrieved and all analogues/thermocouples observed to be functioning properly. Internal memories were reset and clocks were synchronized using the Prolog software.

Specific detailed information regarding temperature data is contained in the report section on the Tier II Soil Disposal Facility. Raw data retrieved directly from the dataloggers were provided to DCC with the field progress report on August 26, 2011. The manual thermal monitoring data is presented in tabular form on the thermistor inspection sheets for each landfill

2.7 FIELD NOTES AND DATA

Field notes from the 2011 landfill monitoring program, including soil and water sampling are included in Appendix B for reference. Notes were written on waterproof field sheet and in field books and the notes scanned to an Adobe pdf document for future reference and back up. Locations of all observations and features for the visual inspection were recorded using a hand-held Garmin Oregon 300 GPS device, which included a combination of continuous tracks and discrete waypoints. Data packages collected from the individual vertical thermistors were downloaded directly to a field laptop computer.

2.8 QUALITY CONTROL

Sila implemented standard sample collection techniques to decrease the likelihood of compromising collected samples. The methods used for sample collection are summarized in Sections 2.4 and 2.5 of this report. The following measures were taken to minimize sample cross-contamination:

- All samples were placed directly into the appropriate laboratory supplied containers (for the particular analysis)
- Soil samples were collected with the use of decontaminated sampling equipment and/or nitrile gloves that were used only once
- All samples were stored in chilled coolers/refrigerators throughout the field program and chilled coolers during subsequent transfer to the respective laboratory.

Chains of Custody (COC) forms were completed by the Project Engineer after sample collection. The samples were refrigerated prior to off-site shipment by First Air Cargo directly to Maxxam (via Yellowknife) and Exova in Edmonton and ESG, via Ottawa to Kingston, Ontario where they were checked in by laboratory representatives. All analysis was completed as specified on COC forms.

2.9 QA/QC PROCEDURES

Sila used standard QA/QC procedures as specified in the ToR and CCME Guidance Documents for this project. The following is a summary of the analytical QA/QC samples collected:

- 10% Blind Duplicate Samples of soil were sent to Maxxam
- 10% Interlab Duplicate Samples were sent to Exova (looking for variation in procedures causing significant difference in analytical result). Results for both the blind duplicates and the interlab duplicates can be found in Appendix C, as actual values and relative percent differences
- 10% Archival Samples of soil to ESG (soils).

Maxxam has QA/QC measures for sample analysis. Maxxam QC samples will typically be introduced into the analytical stream on a batch basis, normally comprising 20% – 30% of the total sample throughput. A batch size of 15 – 20 typically includes one of each control standard, reference standard, surrogate spike, duplicate sample, and method blank. A **control sample** is a blank matrix fortified with analyte of interest and carried through all analytical steps to monitor lab performance (recovery & basis) on clean matrix. A **reference sample** is a sample with predetermined certified characteristics that undergoes the same processing as samples used to evaluate accuracy of procedure. A **surrogate spike** is an organic compound with similar chemical composition and behaviour in the analytical process used to monitor recovery in each sample. A **duplicate sample** occurs when client samples are analyzed in duplicate to monitor reproducibility in analysis and preparation. Finally, a **method blank** is a blank sample matrix carried through the same procedure as the samples, and is used to monitor for process contamination.

Exova follows similar in-house QA/QC procedures. Maxxam and Exova QA/QC reports can be found in Appendix C.

3 BORROW AREA NORTH LANDFILL

3.1 BACKGROUND AND MONITORING PROGRAM

The Borrow Area North Landfill is located along the road heading north of the station area, approximately 500 m north of the former station infrastructure pad. The landfill is located within a relatively flat lying area that historically had been used for material borrow. The landfill has three regrade areas including engineered cover and encompasses a footprint of approximately 9,300 m^2 with the final cover extending approximately 0.75 m to 1.0 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination and its potential migration pathways and receptors, the Borrow Area North Landfill was classified as low potential environmental risk, except for Lobe 3 which was classified at a moderate potential environmental risk due to the presence of surface soil contamination. The remediation consisted of regrading with the placement of additional granular fill at all lobes.

The long term monitoring plan consists of visual monitoring and collection of soil samples.

The 2011 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

3.2 VISUAL INSPECTION REPORT

The visual inspection of the Borrow Area North Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table IV of this report.

Settlement
An indication of minor settlement was noted at one location, consisting of a linear depression on the northwest corner of Lobe 3 (Feature A). The 4 m by 0.7 m depression extended in a north-south direction and was 0.1m deep. This feature was not noted during the previous 2010 inspection.

Erosion
One area of minor erosion was noted on the southeast side slope of the Lobes 4&5 regrade (Feature B). The erosion consisted of fines washing along approximately 25 linear meters of the toe of slope. Erosion appears to be the result of seasonal ponding along the southeast side of the lobe. This feature was dry at the time of the 2011 inspection and appears to be self-armouring with an acceptable severity rating. This feature was not noted during the previous 2010 inspection.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No Indications of burrowing animals were noted.

Re-establishment of Vegetation
No evidence of vegetation was noted on the landfill.

Staining
Two areas of discoloration (staining) were noted during the 2011 inspection, including one relatively small area on the north side slope of the Lobe 4&5 regrade (Feature C) and a larger area associated with a

wetted area immediately east of Lobe 3 (Feature D). There were no odours in either area at the time of the 2011 inspection.

Seepage Points
No areas of seepage were noted at the landfill.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
There is no monitoring instrumentation installed at this landfill.

Other Features of Note
Significant ponding was noted along the northeast side of Lobe 3 during the 2011 inspection. This area was consistent with findings from the 2002 site investigation and the 2010 landfill inspection and included observations of rust-colored staining in wetted areas along the toe of the lobe. There was no direct seepage from the landfill.

Discussion
The Borrow Area North Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawings, is presented in the following pages.

Table IV: Visual Inspection Checklist / Report – Borrow Area North Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 – Jenny Lind Island
LANDFILL DESIGNATION: Borrow Area North Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Borrow Area North Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, BORROW AREA NORTH LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-1.2 (Lobe 3 - NW corner - New Obs)	4 m	0.7 m	0.1 m	Isolated (<1%)	Minor lineal depression	BANLF-8	Acceptable	Cover and slopes appear stable.
Erosion	Yes	FEATURE B See Figure CAM-1.2 (Lobes 4&5 - SE side - New Obs)	25 m	1.5 m	0.01 m	Isolated (<2%)	Minor washing of fines along toe of slope	BANLF-26	Acceptable	Former ponded area. Cover and slopes appear stable.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	Yes	FEATURE C See Figure CAM-1.2 (Lobes 4&5 - N side - New Obs)	4 m	1 - 3 m	Unknown	Isolated (<1%)	Minor staining of cover material on side slope	BANLF-22	Acceptable	N/A
		FEATURE D See Figure CAM-1.2 (Lobe 3 - E side)	18 m	6 m	Unknown	Isolated (<2%)	Rust coloured staining east of Lobe 3	BANLF-12-14	Acceptable	Not in contact with landfill.
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	See Figure CAM-1.2 (Lobe 3 - E and NE sides)	Varies	Varies	Unknown	N/A	Water ponding along toe	BANLF-4,10 - 16	Acceptable	Ponding consistent with observations prior to landfill regrading and 2011 inspection. Slopes appear stable.
Additional Photos	Yes	See Figure CAM-1.2 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

3.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Borrow Area North Landfill has been completed as per the ToR and is included as Table V below.

Table V: Preliminary Stability Assessment – Borrow Area North Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of the landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

3.4 LOCATION PLAN

The Location Plan for the Borrow Area North Landfill has been completed as per the ToR and is presented in Figure CAM-1.2.

N

W E

S

389 600 E

389 750 E

389 900 E

7 621 450 N

7 621 300 N

ARCHAEOLOGICAL FEATURES
(GRAVE SITE)

ACCESS ROAD

BORROW AREA NORTH
LANDFILL–LOBES 1 AND 2

PONDING

FEATURE A – Minor Settlement
4.0mx0.7mx0.1m D

BORROW AREA NORTH
LANDFILL–LOBE 3

PONDING

FEATURE D – Minor Staining
18.0x6.0m

BM–1

FEATURE C – Minor Staining
4.0mx3.0m

BORROW AREA NORTH
LANDFILL–LOBES 4 AND 5

FEATURE B – Minor Erosion
25.0mx1.5mx0.01m D

29m 28m 30m 27m

110 111 112 113 120 121 122 123 124 125 126 127 128 131 132 134 135 136 137 138

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

LEGEND

- BM–1 — PERMANENT BENCHMARK LOCATION (1)
- 110 — COORDINATE POINT
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER
- MINOR SETTLEMENT (NTS)
- STAINING (NTS)
- MINOR EROSION (NTS)

0 15m 30m 45m 60m 75m

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COLLECTION OF LANDFILL MONITORING DATA

CAM–1, JENNY LIND ISLAND, NUNAVUT

BORROW AREA NORTH LANDFILL

SITE REMEDIATION SOLUTIONS

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P. LÉGARÉ	J. MARTEL–GAGNON	J.–P. PELLETIER
PROJECT NO:	DRAWING NO:	PAGE
CD9229_003_160	CD9229_003_160-CAM-1.2-PL	PL

FIGURE CAM-1.2

G:\CD9229\2011\CAM-1\PRE\OCTOBRE 2011\CD9229_003_110-CAM-1.2-PL.dwg, PL, 2011-11-10 12:42:24 PM

3.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Borrow Area North Landfill has been completed as per the ToR and is included as Table VI hereafter. The Photographic Record contains only an index and "thumbnail" photographs. Full sized photographs are contained in the Addendum DVD-ROM.

TABLE VI: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: Cam-1, Jenny Lind Island
Landfill: Borrow Area North Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
Lobes 1 & 2						
1		C111_4209	8/13/2011	389731	7621413	View looking south at BANLF - Lobes 1&2
2		C111_4210	8/13/2011	389734	7621438	Panoramic view looking south to west-northwest across BANLF - Lobes 1&2
3		C111_4211	8/13/2011	389725	7621458	View looking north along east toe of BANLF - Lobes 1&2
Lobe 3						
4		C111_4207	8/13/2011	389732	7621402	View looking southeast at ponded area along northeast toe of BANLF- Lobe 3
5		C111_4208	8/13/2011	389731	7621402	View looking southwest along north toe of BANLF - Lobe 3
6		C111_4206	8/13/2011	389739	7621387	Panoramic view looking west-southwest to southeast from the northeast corner across BANLF - Lobe 3
7		C111_4213	8/13/2011	389692	7621386	View looking northeast along north toe of BANLF - Lobe 3
8		C111_4212	8/13/2011	389691	7621384	View looking south along west toe of BANLF - Lobe 3. Minor settlement along side slope (4m L, 0.7m W, 0.1m D) - FEATURE A
9		C111_4214	8/13/2011	389692	7621360	View looking south along west toe of BANLF - Lobe 3
10		C111_4205	8/13/2011	389732	7621364	View looking northeast at ponded area along east toe of BANLF - Lobe 3
11		C111_4203	8/13/2011	389734	7621339	View looking north along east toe of BANLF - Lobe 3
12		C111_4204	8/13/2011	389734	7621337	View looking south along east toe of BANLF - Lobe 3. Note minor staining along toe (18m L, 6m W) - Feature D
13		C111_4201	8/13/2011	389734	7621319	View looking south at minor ponding and rust coloured staining (18m L, 6m W) in wet area located immediately southeast of BANLF - Lobe 3 - Feature D
14		C111_4202	8/13/2011	389731	7621294	Rust coloured staining (18m L, 6m W) in ponded area on southeast side of BANLF - Lobe 3 - Feature D

15		C111_4200	8/13/2011	389731	7621285	View looking north along former ponded area located southeast of BANLF - Lobe 3
16		C111_4199	8/13/2011	389726	7621278	Panoramic view looking southwest to north from the southeast corner across BANLF - Lobe 3
17		C111_4198	8/13/2011	389698	7621263	Panoramic view looking northwest to northeast from the south end across BANLF - Lobe 3
18		C111_4215	8/13/2011	389692	7621302	View looking north along west side of BANLF - Lobe 3
19		C111_4216	8/13/2011	389669	7621322	View looking northeast at west side of BANLF - Lobe 3
20		C111_4195	8/13/2011	389730	7621235	View looking north-northwest at BANLF - Lobe 3
Lobes 4 & 5						
21		C111_4194	8/13/2011	389728	7621231	View looking southwest at northeast side of BANLF - Lobes 4&5
22		C111_4196	8/13/2011	389696	7621230	View looking southeast at stained minor staining (4m L, 3m W) north side slope of BANLF - Lobes 4&5 - Feature C
23		C111_4197	8/13/2011	389690	7621234	View looking southwest along west toe of BANLF - Lobes 4&5
24		C111_4191	8/13/2011	389650	7621191	View looking northeast along west toe of BANLF - Lobes 4&5
25		C111_4190	9/15/2011	389652	7621175	Panoramic view looking north to east from southwest corner across BANLF - Lobes 4&5
26		C111_4193	8/13/2011	389718	7621185	View looking west-southwest at minor erosion (25m L, 1.5m W, 0.01m D) along south toe of BANLF - Lobes 4&5 - Feature B
27		C111_4192	9/15/2011	389708	7621188	Panoramic view looking southwest to north-northeast to from southeast corner across BANLF - Lobes 4&5
Aerial						
A1		C111_4277	8/13/2011	389622	7621378	Aerial view looking east at Borrow Area North Landfill

4 NORTHEAST LANDFILL

4.1 BACKGROUND AND MONITORING PROGRAM

The Northeast Landfill is located immediately to the northwest of the former pallet line, approximately 400 m of the former station infrastructure pad. The landfill is located within a relatively flat lying area west of the service road extending north of the station. The landfill has two regrade areas, including engineered cover, encompasses a footprint of approximately 3,900 m^2 with the final cover extending approximately 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Northeast Landfill was classified as low potential environmental risk. The remediation consisted of regrading with the placement of additional granular fill at all lobes.

The long term monitoring plan consists of visual monitoring and collection of soil samples.

The 2011 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

4.2 VISUAL INSPECTION REPORT

The visual inspection of the Northeast Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table VII of this report.

Settlement
An indication of minor settlement was noted at one location, consisting of a linear depression on the north inside corner of Lobes 1&3 regrade (Feature A). The 2 m by 1 m depression extended in a north-south direction and was 0.2 m deep. This feature was not noted during the 2010 inspection.

Erosion
No evidence of erosion was noted.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No indications of burrowing animals were noted.

Re-establishment of Vegetation
No signs of vegetation were noted on the landfill.

Staining
No staining was noted.

Seepage Points
No areas of seepage were noted at the landfill.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
There is no monitoring instrumentation installed at this landfill.

Other Features of Note

One 4 m by 4 m area of uneven side slope was noted on the northwest corner of the Lobes 1&3 regrade. A similar notation was made in the 2010 inspection report; however there was no photograph or dimension provided for year-to-year comparison. The uneven slope does not appear to be associated with settlement or erosion.

Discussion

The Northeast Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawings, is presented in the following pages.

Table VII: Visual Inspection Checklist / Report – Northeast Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 – Jenny Lind Island
LANDFILL DESIGNATION: Northeast Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Northeast Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, NORTHEAST LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-1.3 (Lobes 1&3 - N side slope - New Obs)	2 m	1 m	0.2 m	Isolated (<1%)	Minor lineal depression	NELF-12, 13	Acceptable	Cover and slopes appear stable.
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	See Figure CAM-1.3 (Lobes 1&3 - NW corner side slope)	4 m	4 m	N/A	Isolated (<1%)	Uneven side slope	NELF-19	N/A	N/A
Additional Photos	Yes	See Figure CAM-1.3 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

4.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Northeast Landfill has been completed as per the ToR and is included as Table V below.

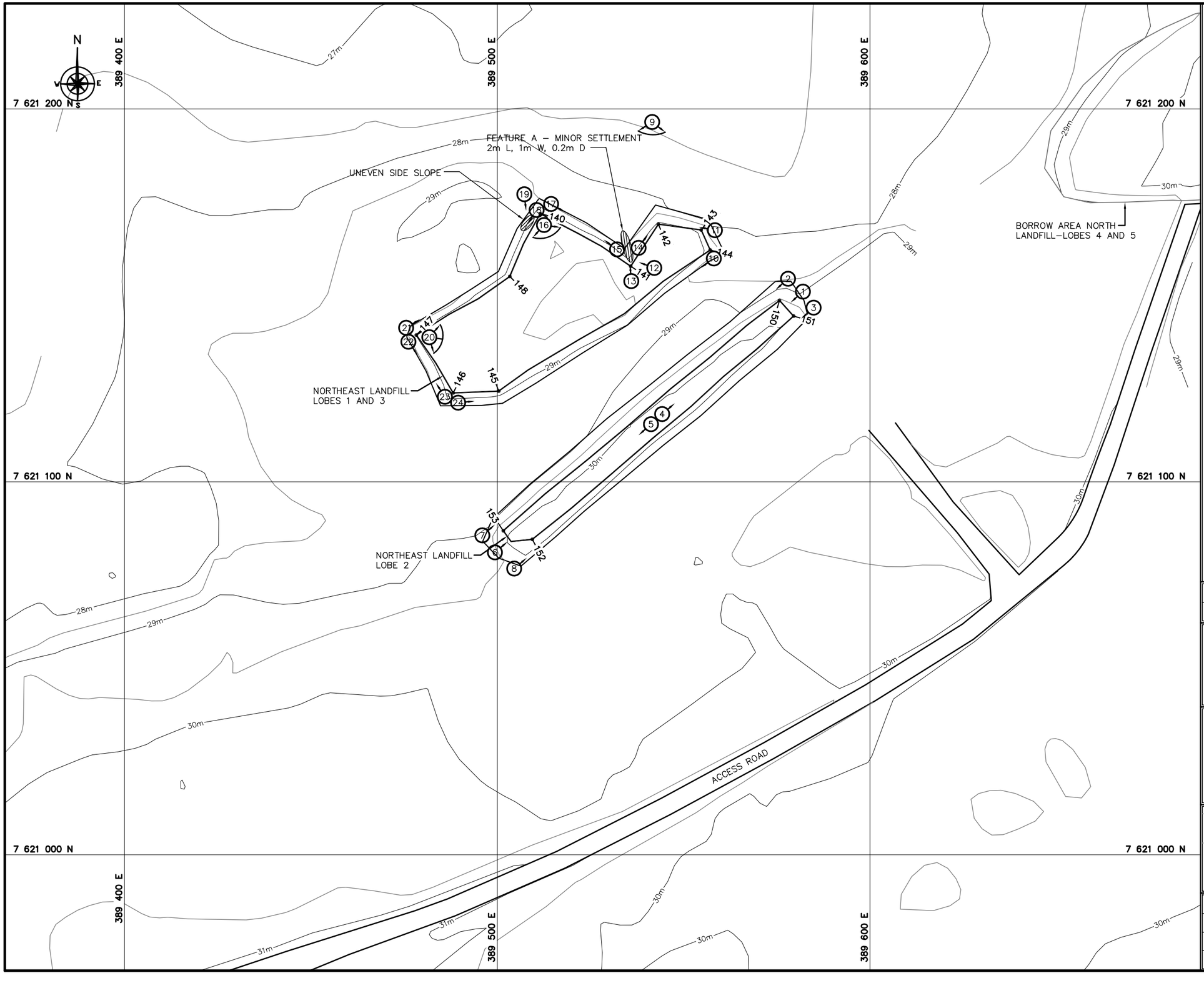
Table VIII: Preliminary Stability Assessment – Northeast Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of the landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

4.4 LOCATION PLAN

The Location Plan for the Northeast Landfill has been completed as per the ToR and is presented in Figure CAM-1.3.



LEGEND

- COORDINATE POINT
- MONITORING SITE FEATURE
- APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11-10-27	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

NORTHEAST LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

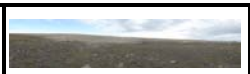
MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 1,000	NOVEMBER 2011
DRAWN BY:	VERIFIED BY:	APPROVED BY:
P. LÉGARÉ	J. MARTEL–GAGNON	J.–P. PELLETIER
PROJECT NO:	DRAWING NO:	PAGE
CD9229_003_160	CD9229_003_160-CAM-1.3-PL	PL

FIGURE CAM-1.3

4.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Northeast Landfill has been completed as per the ToR and is included as Table IX hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full sized photographs are contained in the Addendum DVD-ROM.

TABLE IX: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: Northeast Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
Lobes 1 & 3						
9		C111_4181	8/13/2011	389541	7621196	Panoramic view looking southeast to southwest from north of NE Landfill - Lobes 1&3
10		C111_4179	8/13/2011	389558	7621161	View looking southwest along south toe of NE Landfill - Lobes 1&3
11		C111_4180	8/13/2011	389558	7621168	View looking west along east toe of NE Landfill - Lobes 1&3
12		C111_4178	8/13/2011	389542	7621156	View looking northwest at minor settlement on inside side slope (2m L x 1m W x 0.2m D) - FEATURE A
13		C111_4177	8/13/2011	389536	7621154	View looking north at minor settlement on inside side slope (2m L x 1m W x 0.2m D) - FEATURE A
14		C111_4167	8/13/2011	389536	7621160	View looking northeast along north toe of NE Landfill - Lobes 1&3
15		C111_4166	8/13/2011	389535	7621160	View looking northwest along north toe of NE Landfill - Lobes 1&3
16		C111_4171	8/13/2011	389513	7621169	Panoramic view looking east to southwest from north side across NE Landfill - Lobes 1&3
17		C111_4168	8/13/2011	389512	7621174	View looking southeast along north toe of NE Landfill - Lobes 1&3
18		C111_4169	8/13/2011	389511	7621174	View looking southest along north toe of NE Landfill - Lobes 1&3
19		C111_4170	8/13/2011	389508	7621177	View looking south at uneven side slope on northwest corner of NE Landfill - Lobes 1&3 (4m L, 4m W)
20		C111_4172	8/13/2011	389481	7621139	Panoramic view looking northeast to south-southeast from southwest corner across NE Landfill - Lobes 1&3
21		C111_4174	8/13/2011	389476	7621140	View looking northeast along west toe of NE Landfill - Lobes 1&3
22		C111_4173	8/13/2011	389476	7621139	View looking southeast along west toe of NE Landfill - Lobes 1&3

23		C111_4176	8/13/2011	389487	7621122	View looking northwest along west toe of NE Landfill - Lobes 1&3
24		C111_4175	8/13/2011	389488	7621122	View looking west along south toe of NE Landfill - Lobes 1&3
Lobe 2						
1		C111_4182	8/13/2011	389582	7621151	View looking southwest along centerline of NE Landfill - Lobe 2
2		C111_4183	8/13/2011	389578	7621154	View looking southwest along west toe of NE Landfill - Lobe 2
3		C111_4184	8/13/2011	389585	7621146	View looking southwest along east toe of NE Landfill - Lobe 2
4		C111_4185	8/13/2011	389543	7621117	View looking northeast along centerline of NE Landfill - Lobe 2
5		C111_4186	8/13/2011	389543	7621117	View looking southwest along centerline of NE Landfill - Lobe 2
6		C111_4187	8/13/2011	389499	7621081	View looking northeast along centerline of NE Landfill - Lobe 2
7		C111_4188	8/13/2011	389496	7621086	View looking northeast along west toe of NE Landfill - Lobe 2
8		C111_4189	8/13/2011	389505	7621077	View looking northeast along east toe of NE Landfill - Lobe 2
Aerial						
A2		C111_4276	8/13/2011	389378	7621118	Aerial view looking east at Northeast Landfill

5 STATION WEST LANDFILL

5.1 BACKGROUND AND MONITORING PROGRAM

The Station West Landfill is located approximately 175 m west of the Non-Hazardous Waste Landfill. The landfill forms a slight topographic high within a relatively flat lying area west of the former station infrastructure pad. The landfill has a single regrade area encompassing a footprint of approximately 2,400 m^2 with the final cover extending approximately 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Station West Landfill was classified as moderate potential environmental risk. The remediation consisted of excavation of Tier II contaminated soil, removal of debris and regrading with the placement of additional granular fill.

The long term monitoring plan consists of visual monitoring and collection of soil samples.

The 2011 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

5.2 VISUAL INSPECTION REPORT

The visual inspection of the Station West Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table VII of this report.

Settlement
Indications of minor settlement were noted in three general areas (Features A, B and C) on the landfill surface, including: five relatively small sized (round and linear) depressions situated on the northeast side slope (Feature A); four small depressions on the north cover area (Feature B); and a moderate sized uneven area on the east corner of the landfill (Feature C). All three features have an acceptable severity rating. With the exception of Feature C, all areas of settlement were not noted during the 2010 inspection.

Erosion
Two areas (Features D and E) of erosion were noted on the surface, side slopes and/or margins of the Station West Landfill during the 2011 inspection. Feature D consisted of a shallow linear runoff feature extending down the east side slope, whereas Feature E consisted of a larger area extending along the north margin of the landfill where seasonal ponding has resulted in minor erosion along the toe and side slope. Both areas appear stable and have an acceptable severity rating. Observations appear consistent with the 2010 inspection.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No indications of burrowing animals were noted.

Re-establishment of Vegetation
No vegetation was noted on the landfill.

Staining
One localized area of staining was noted on the west cover area of the landfill (Feature F). The linear rust coloured stain appears consistent with findings from the 2010 inspection.

Seepage Points
No areas of seepage were noted at the landfill.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
There is no monitoring instrumentation installed at this landfill.

Other Features of Note
Two parallel and one single tension crack were noted on the southeast corner of the landfill (Feature G). The cracks ranged in length from 4 to 7 m long, were typically 3 to 5 mm wide and extended in a perpendicular direction to the slope. The location and frequency of cracks on the southeast corner appears consistent with findings from the previous 2010 inspection. Based on observations made during the 2011 inspection, the landfill surface appears stable and has an acceptable severity rating.

Discussion
The Station West Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table X: Visual Inspection Checklist / Report – Station West Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 – Jenny Lind Island
LANDFILL DESIGNATION: Station West Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

5.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for Station West Landfill has been completed as per the ToR and is included as Table XI below.

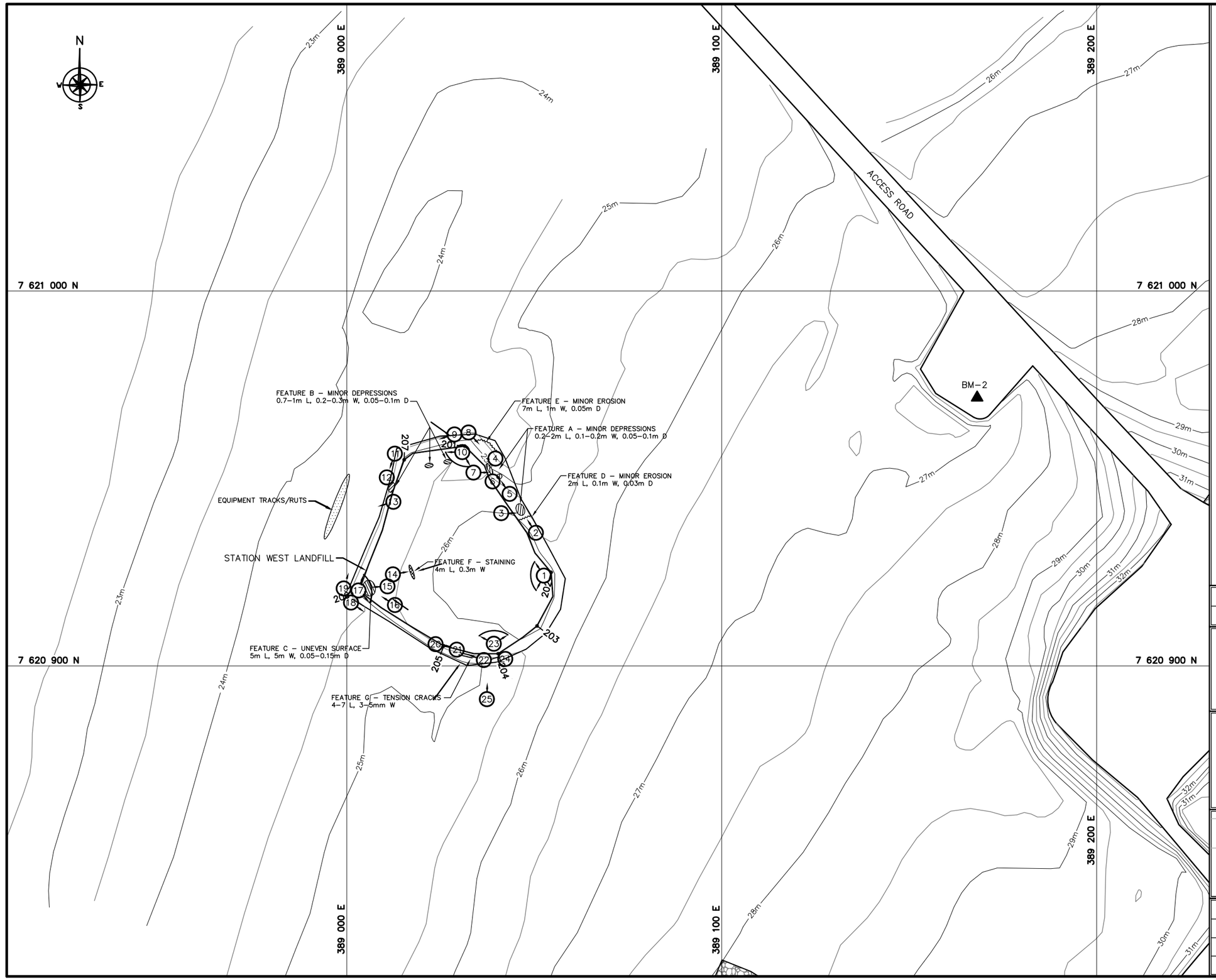
Table XI: Preliminary Stability Assessment – Station West Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of the landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

5.4 LOCATION PLAN

The Location Plan for the Station West Landfill has been completed as per the ToR and is presented in Figure CAM-1.4.



LEGEND

- BM–2 — PERMANENT BENCHMARK LOCATION (1)
- 201 — COORDINATE POINT
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)
- TENSION CRACK(s) (NTS)

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–11–01	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

STATION WEST LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,000	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.4-PL	PAGE PL

FIGURE CAM-1.4

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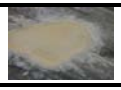
5.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Station West Landfill has been completed as per the ToR and is included as Table XII hereafter. The Photographic Record contains only an index and "thumbnail" photographs. Full sized photographs are contained in the Addendum DVD-ROM.

TABLE XII: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: Station West Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
1		C111_4118	8/13/2011	389053	7620924	Panoramic view looking southwest to northwest from east side across Station West Landfill
2		C111_4119	8/13/2011	389050	7620935	View looking northwest at three depressions (0.4-0.7m L, 0.15-0.2m W, 0.05m D) - Feature A; and minor erosion (2m L, 0.1m W, 0.03m D) - Feature D on east side slope of Station West Landfill
3		C111_4120	8/13/2011	389041	7620941	View looking east at three depressions (0.4-0.7m L, 0.15-0.2m W, 0.05m D) - Feature A; and minor erosion (2m L, 0.1m W, 0.03m D) - Feature D on east side slope of Station West Landfill
4		C111_4121	8/13/2011	389039	7620954	Small isolated depression on east side slope of Station West Landfill (0.2m L, 0.2m W, 0.1m D) - Feature A
5		C111_4122	8/13/2011	389043	7620946	View looking northwest at depression on east side slope of Station West Landfill (0.2m L, 0.2m W, 0.1m D) - Feature A
6		C111_4123	8/13/2011	389039	7620950	Linear depression on east side slope of Station West Landfill (0.8m L, 0.2m W, 0.05-0.1m D) - Feature A
7		C111_4124	8/13/2011	389034	7620952	View looking east at linear depression on east side slope of Station West Landfill (0.8m L, 0.2m W, 0.05-0.1m D) - Feature A
8		C111_4125	8/13/2011	389032	7620962	View looking southeast along east toe of Station West Landfill. Erosion of fines along toe from seasonal ponding (7m L, 1m W, 0.05m D) - Feature E
9		C111_4126	8/13/2011	389031	7620962	View looking west-southwest along north side slope of Station West Landfill
10		C111_4127	8/13/2011	389031	7620957	Panoramic view looking west to southeast from north side across Station West Landfill (0.7-1m L, 0.2-0.3m W, 0.05-0.1m D) - Feature B
11		C111_4128	8/13/2011	389013	7620957	View looking south-southwest along west side slope of Station West Landfill. Note minor depression on surface
12		C111_4129	8/13/2011	389013	7620948	Minor depression on west side slope (0.5m L, 0.3m W, 0.1m D) - Feature B
13		C111_4130	8/13/2011	389013	7620944	View looking southwest at heavy equipment tracks west of Station West Landfill
14		C111_4131	8/13/2011	389013	7620923	View looking west at linear stain on surface of Station West Landfill (4m L, 0.3m W) - Feature F
15		C111_4132	8/13/2011	389009	7620923	View looking southwest at uneven surface on southwest corner of Station West Landfill (5m L, 5m W, 0.05-0.15m D) - Feature C

16		C111_4133	8/13/2011	389012	7620917	View looking northwest at uneven surface on southwest corner of Station West Landfill (5m L, 5m W, 0.05-0.15m D) - Feature C
17		C111_4134	8/13/2011	389004	7620920	Panoramic view looking northeast to southeast from southwest corner across Station West Landfill
18		C111_4135	8/13/2011	389001	7620918	View looking southeast along south side slope of Station West Landfill
19		C111_4136	8/13/2011	389000	7620919	View looking north-northeast along west side slope of Station West Landfill
20		C111_4137	8/13/2011	389023	7620906	View looking east at parallel cracks on south side slope of Station West Landfill (7m L, 3-5mm W) - Feature G
21		C111_4138	8/13/2011	389030	7620904	Parallel cracks on south side slope of Station West Landfill (7m L, 3-5mm W) amd 0.3m apart - Feature G
22		C111_4139	8/13/2011	389038	7620901	View looking west-northwest at parallel cracks on south side slope of Station West Landfill (7m L, 3-5mm W) - Feature G
23		C111_4140	8/13/2011	389039	7620906	Panoramic view looking northwest to northeast from south side across Station West Landfill
24		C111_4142	8/13/2011	389040	7620902	Single crack on south side slope of Station West Landfill (4m L, 2-4mm W) - Feature G
25		C111_4143	8/13/2011	389037	7620891	View looking north at area with cracks on south side slope of Station West Landfill
Aerial						
A3		C111_4275	8/13/2011	388927	7620966	Aerial view looking west southeast at Station West Landfill

6 NON-HAZARDOUS WASTE LANDFILL

6.1 BACKGROUND AND MONITORING PROGRAM

The Non-Hazardous Waste Landfill (NHWLF) is located immediately adjacent to the former station infrastructure pad. The landfill is bound to the southwest by the former pad and southeast by the access road leading north from the former station area. The landfill, including granular cover, encompasses a footprint of approximately 5,850 m^2, with the final cover extending between 1 and 3.5 m above the surrounding grade. This landfill was constructed for the disposal of non-hazardous wastes, site debris and DCC Tier I and Type A hydrocarbon impacted soil. Landfill materials are contained by a granular perimeter berm and cover. Four groundwater monitoring wells are installed at the landfill perimeter.

The long term monitoring plan consists of visual monitoring and periodic collection of soil and groundwater samples.

The 2011 monitoring of this landfill includes visual inspection to verify for evidence of settlement or erosion. The locations of groundwater monitoring wells are identified on Figure CAM-1.5.

6.2 VISUAL INSPECTION REPORT

The visual inspection of the NHWLF was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table IX of this report.

Settlement
No indications of settlement were noted.

Erosion
No evidence of erosion was noted.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No indications of burrowing animals were noted.

Re-establishment of Vegetation
No sign of vegetation was noted.

Staining
No areas of staining were observed at the time of the inspection.

Seepage Points
No seepage point was observed at this landfill.

Debris
Three areas of partially exposed black geotextile material were noted on the northeast, east and west sides of the landfill surface (Feature A). This feature appears unchanged from the previous 2010 inspection. There was no other indication of debris at the landfill.

Presence/Condition of Monitoring Instruments
All monitoring well installations at the landfill were found to be in good condition.

Other Features of Note
No other feature was noted.

Discussion
The NHWLF performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XIII: Visual Inspection Checklist / Report – NHWLF

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: NHWLF (New Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Non-Hazardous Waste Landfill
Designation: New Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, NON-HAZARDOUS WASTE LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	Yes	FEATURE A See Figure CAM-1.5 (NE, E and W cover)	0.1 - 0.3 m	0.1 - 0.2 m	Unknown	Isolated (<1%)	Exposed geotextile material	NHWLF-10-12, 15, 16, 19, 20	Acceptable	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM-1.5 (S, NE, N and NW)	N/A	N/A	N/A	N/A	MW-01 to -04	NHWLF-2, 5, 6, 17	N/A	All monitoring wells appear in good condition.
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-1.5 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

6.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for NHWLF has been completed as per the ToR and is included as Table X hereafter.

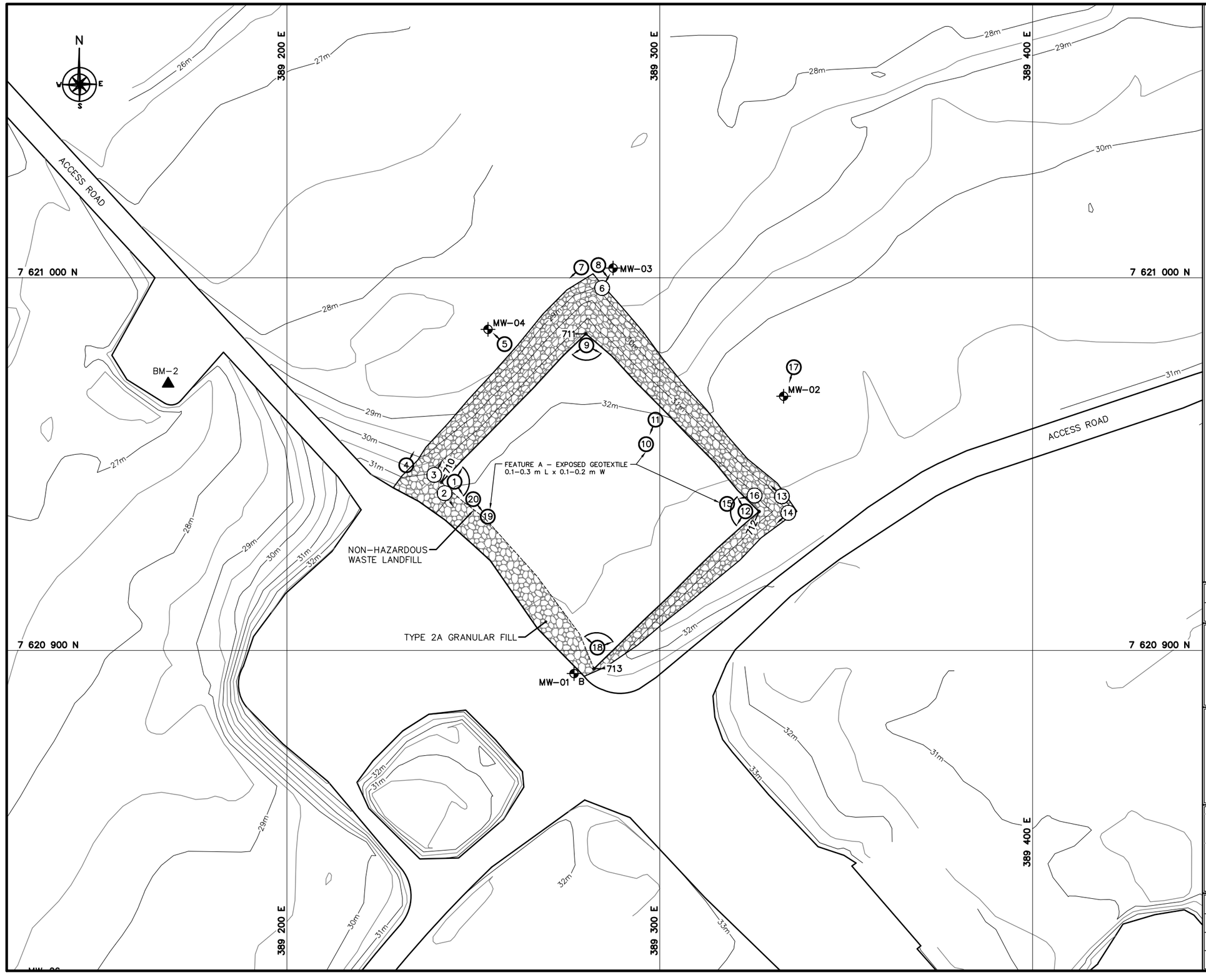
Table XIV: Preliminary Stability Assessment – NHWLF

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

6.4 LOCATION PLAN

The Location Plan for the NHWLF has been completed as per the ToR and is presented in Figure CAM-1.5.



LEGEND

- BM–2 — PERMANENT BENCHMARK LOCATION (1)
- 710 — COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION (5)
- B — MONITORING SITE FEATURE
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–11–01	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

NON-HAZARDOUS WASTE LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
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MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,000	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.5-PL	PAGE PL

FIGURE CAM-1.5

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6.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Non-Hazardous Waste Landfill has been completed as per the ToR and is included as Table XV hereafter. The Photographic Record contains only an index and "thumbnail" photographs. Full sized photographs are contained in the Addendum DVD-ROM.

TABLE XV: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: NHWLF
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
1		C111_4144	8/13/2011	389245	7620945	Panoramic view looking northeast to southeast from west corner across NHWLF
2		C111_4145	8/13/2011	389240	7620944	View looking southeast along southwest side of NHWLF
3		C111_4146	8/13/2011	389240	7620945	View looking northeast along northwest side slope of NHWLF
4		C111_4147	8/13/2011	389232	7620949	View looking northeast along northwest toe of NHWLF
5		C111_4148	8/13/2011	389258	7620983	View looking northwest at MW-04 at NHWLF
6		C111_4149	8/13/2011	389285	7620997	View looking northeast at MW-03 at NHWLF
7		C111_4150	8/13/2011	389280	7621004	View looking southwest along northwest side slope of NHWLF
8		C111_4151	8/13/2011	389282	7621003	View looking southeast along northeast side slope of NHWLF
9		C111_4152	8/13/2011	389281	7620982	Panoramic view looking southeast to southwest from north corner across NHWLF
10		C111_4155	8/13/2011	389296	7620955	Exposed geotextile material on northeast cover area of NHWLF - Feature A
11		C111_4156	8/13/2011	389299	7620962	View looking southeast at exposed geotextile material on northeast cover area of NHWLF - Feature A
12		C111_4157	8/13/2011	389324	7620937	Panoramic view looking southwest to northwest from east corner across NHWLF. Note exposed geotextile material in foreground.
13		C111_4158	8/13/2011	389335	7620940	View looking northwest along northeast side slope of NHWLF
14		C111_4159	8/13/2011	389335	7620938	View looking southwest along southeast side slope of NHWLF
15		C111_4160	8/13/2011	389318	7620940	Exposed geotextile material on east cover area of NHWLF - Feature A

16		C111_4161	8/13/2011	389325	7620942	View looking west at exposed geotextile material on east cover area of NHWLF - Feature A
17		C111_4162	8/13/2011	389336	7620976	View looking south-southwest at MW-02 at NHWLF
18		C111_4163	8/13/2011	389283	7620901	Panoramic view looking northwest to northeast from south corner across NHWLF.
19		C111_4164	8/13/2011	389254	7620936	Exposed geotextile material on west cover area of NHWLF - Feature A
20		C111_4165	8/13/2011	389250	7620941	View looking southeast at exposed geotextile material on west cover area of NHWLF - Feature A
Aerial						
A4		C111_3991	8/13/2011	389106	7620974	Aerial view looking east at Non-Hazardous Waste Landfill
A5		C111_4274	8/13/2011	389146	7620879	Aerial view looking northeast at Non-Hazardous Waste Landfill

7 TIER II SOIL DISPOSAL FACILITY

7.1 BACKGROUND AND MONITORING PROGRAM

The Tier II Soil Disposal Facility is constructed on the west side of the access road, southwest of the former station infrastructure pad. The landfill was constructed with a double containment system consisting of a geomembrane liner system and the placement of sufficient surface fill to promote freezing of the landfill contents. The facility encompasses a footprint of approximately 8,900 m^2 with the final cover extending between 6-7.5 m above the surrounding grade.

Four groundwater monitoring wells are installed at the landfill perimeter, and four thermistors are installed within the landfill footprint to monitor freeze back conditions.

The long term monitoring plan consists of visual monitoring, collection of soil and groundwater samples and monitoring of subsurface ground temperatures.

The 2011 monitoring of this landfill includes visual inspection to verify for evidence of settlement or erosion, collection of soil and groundwater samples to monitor the presence of leachate and finally retrieval of data from the thermistors. The locations of groundwater monitoring wells, soil samples and thermistor installations are identified on Figure CAM-1.6.

Soil at all stations was sampled as specified. Inspection and monitoring were carried out at each of the monitoring wells as per the ToR. All monitoring wells were dry at the time of sampling and therefore not sampled.

7.2 VISUAL INSPECTION REPORT

The visual inspection of the Tier II Soil Disposal Facility was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XIX of this report.

Settlement
An indication of minor settlement was noted at a single location on the southeast area of the landfill cover (Feature A). It consists of an isolated “pothole” depression measuring 0.2 m in diameter. No settlement was noted at the facility during the 2010 inspection.

Erosion
Evidence of minor surface erosion was noted at three locations on the northwest facing slope (Feature B) of the facility.The erosion at the three locations was shallow and extended perpendicular to the slope from crest to 7 to 10 m downslope. The areas affected appear to be self-armouring and have an acceptable severity rating. Overall, the facility cover appears stable.

No indications of erosion were noted during the 2010 inspection.

Frost Action
No indications of frost action were noted. Please see Other Features of Note below.

Evidence of Burrowing Animals
No indications of burrowing animals were noted.

Re-establishment of Vegetation
No indications of vegetation were noted.

Staining
No areas of staining were observed at the time of the inspection.

Seepage Points
No evidence of seepage was noted

Debris
No exposed debris was noted.

Presence/Condition of Monitoring Instruments
All monitoring well and thermistor installations were found to be in good condition at the facility.

Other Features of Note
There were no other features of note.

Discussion
The Tier II Soil Disposal Facility performance with respect to containment of the debris within the landfill is rated as acceptable. Visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XVI: Visual Inspection Checklist / Report – Tier II Soil Disposal Facility

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Tier II Soil Disposal Facility (New Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Tier II Disposal Facility
Designation: New Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, TIER II DISPOSAL FACILITY

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-1.6 (S cover)	0.2 m	0.2 m	0.03 m	Isolated (<1%)	Minor depression	Tier II -22, 23	Acceptable	Cover appears stable.
Erosion	Yes	FEATURE B See Figure CAM-1.6 (NW side slope - New Obs.)	7-10 m	0.05 - 0.15 m	0.01 - 0.03 m	Isolated (<1%)	Minor erosion	Tier II-10-13, 15, 16	Acceptable	Slope appears stable. Minor washing of fines.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM-1.6	N/A	N/A	N/A	N/A	VT-1 to -4 MW-05 to -08	Tier II-18, 14, 8 Tier II-3, 6, 7, MW5, MW6, MW7, MW8	N/A	All locations in good condition. Monitored and sampled in 2011.
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-1.6 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

7.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Tier II Soil Disposal Facility has been completed as per the ToR and is included as Table XX hereafter.

Table XVII: Preliminary Stability Assessment – Tier II Soil Disposal Facility

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of the landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

7.4 LOCATION PLAN

The Location Plan for the Tier II Soil Disposal Facility has been completed as per the ToR and is included in the following page as Figure CAM-1.6.

N

389 000 E

389 100 E

389 200 E

7 620 800 N

7 620 700 N

25m

26m

27m

28m

29m

30m

31m

32m

MW-01 B

ACCESS ROAD

MW6 6W MW-06

MW7 7W MW-07

MW8 8W MW-08

MW5 5W MW-05 B

VT-1

VT-2

VT-3

VT-4

BM-3

FEATURE B – MINOR EROSION
7–10m L, 0.05–0.15m W, 0.01–0.03m D

FEATURE A – MINOR SETTLEMENT
0.2m L, 0.2m W, 0.03m D

TIER II DISPOSAL FACILITY

TYPE 2A GRANULAR FILL

LEGEND

- BM–3 — PERMANENT BENCHMARK LOCATION (1)
- 810 — COORDINATE POINT
- COMMEMORATIVE PLAQUE LOCATION
- MONITORING WELL LOCATION (3)
- B — BACKGROUND MONITORING WELL LOCATION (1)
- VERTICAL THERMISTOR LOCATION (4)
- MONITORING SOIL SAMPLE LOCATION (4)
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–11–01	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

TIER II DISPOSAL FACILITY

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,000	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.6-PL	PAGE PL

FIGURE CAM-1.6

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7.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Tier II Soil Disposal Facility has been completed as per the ToR and is included as Table XVIII hereafter. The Photographic Record contains only an index and "thumbnail" photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

TABLE XVIII: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: Tier II Soil Disposal Facility
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
1		C111_4048	8/13/2011	389177	7620721	View looking west-northwest at east side of Tier II DF
2		C111_4049	8/13/2011	389184	7620731	Panoramic view looking southwest to northeast at east side of Tier II DF
3		C111_4050	8/13/2011	389160	7620727	View looking west-northwest at east side of Tier II DF
4		C111_4059	8/13/2011	389053	7620727	View looking west at MW-05 at Tier II DF
5		C111_4062	8/13/2011	389147	7620771	Panoramic view looking west to northwest from east corner across Tier II DF
6		C111_4063	8/13/2011	389149	7620756	View looking south at MW-05 located on southeast side of Tier II DF
7		C111_4064	8/13/2011	389136	7620788	View looking northwest at MW-06 located on the north side of Tier II DF
8		C111_4066	8/13/2011	389144	7620771	View looking northwest at VT-3 located on east cover of Tier II DF
9		C111_4067	8/13/2011	389113	7620788	Panoramic view looking east to southwest from north corner across Tier II DF
10		C111_4068	8/13/2011	389113	7620782	View looking northwest at minor erosion on northwest side slope of Tier II DF (7m L, 0.05-0.15m W, 0.01-0.03m D) - Feature B
11		C111_4069	8/13/2011	389097	7620791	View looking southeast at minor erosion on northwest side slope of Tier II DF (7m L, 0.05-0.15m W, 0.01-0.03m D) - Feature B
12		C111_4070	8/13/2011	389111	7620778	View looking northwest at minor erosion on northwest side slope of Tier II DF (10m L, 0.05-0.1m W, 0.01-0.03m D) - Feature B
13		C111_4071	8/13/2011	389092	7620788	View looking southeast at minor erosion on northwest side slope of Tier II DF (10m L, 0.05-0.1m W, 0.01-0.03m D) - Feature B
14		C111_4072	8/13/2011	389099	7620764	View looking southeast at VT-2 (foreground) and VT-4 (background) on central cover of Tier II DF
15		C111_4073	8/13/2011	389100	7620758	View looking northwest at minor erosion on northwest side slope of Tier II DF (8 L, 0.05-0.1m W, 0.01-0.02m D) - Feature B

16		C111_4074	8/13/2011	389082	7620766	View looking southeast at minor erosion on northwest side slope of Tier II DF (8m L, 0.05-0.1m W, 0.01-0.02m D) - Feature B
17		C111_4075	8/13/2011	389084	7620737	Panoramic view looking northeast to southeast from west corner across Tier II DF. VT-1 visible on right
18		C111_4076	8/13/2011	389086	7620733	View of VT-1 on west cover of Tier II DF
19		C111_4077	8/13/2011	389080	7620736	View looking west-southwest down slope on west corner of Tier II DF
20		C111_4078	8/13/2011	389118	7620720	Panoramic view looking west to northeast from south corner across Tier II DF
21		C111_4079	8/13/2011	389119	7620716	View looking southsoutheast down slope on south corner of Tier II DF
22		C111_4080	8/13/2011	389122	7620737	Minor depression on southeast cover of Tier II DF (0.2m L, 0.2m W, 0.03m D) - Feature A
23		C111_4081	8/13/2011	389121	7620730	View looking north-northeast at minor depression on southeast cover of Tier II DF (0.2m L, 0.2m W, 0.03m D) - Feature A
24		C111_4082	8/13/2011	389130	7620689	View looking northeast along east toe of Tier II DF
25		C111_4083	8/13/2011	389129	7620689	View looking northwest along south toe of Tier II DF
26		C111_4084	8/13/2011	389073	7620684	View looking northeast at south side of Tier II DF
27		C111_4085	8/13/2011	389055	7620731	View looking southeast along south toe of Tier II DF
28		C111_4086	8/13/2011	389055	7620732	View looking northeast along west toe of Tier II DF
29		C111_4087	8/13/2011	389039	7620783	View looking southeast at west side of Tier II DF. MW-07 visible in back center.
30		C111_4088	8/13/2011	389052	7620804	View looking southeast at west side of Tier II DF
31		C111_4089	8/13/2011	389100	7620822	View looking southwest along west toe of Tier II DF
32		C111_4090	8/13/2011	389101	7620822	View looking southeast along north toe of Tier II DF

33		C111_4091	8/13/2011	389155	7620818	View looking southwest at north side of Tier II DF
34		C111_4092	8/13/2011	389175	7620778	View looking northwest along north toe of Tier II DF
35		C111_4093	8/13/2011	389175	7620777	View looking southwest along east toe of Tier II DF
36		C111_4266	8/13/2011	389135	7620660	View looking northwest from access road at Tier II DF
Aerial						
A6		C111_4273	8/13/2011	389028.6	7620643.3	Aerial view looking north northeast at Tier II Disposal Facility
Soil Sampling						
5W		C111_4051	8/13/2011	389157	7620734	Sampling location C111-5W located upgradient of Tier II DF
MW5		C111_4052	8/13/2011	389160	7620740	View southwest at C111-5W soil sample location
6W		C111_4054	8/13/2011	389128	7620815	Sampling location C111-6W located downgradient of Tier II DF
MW6		C111_4055	8/13/2011	389123	7620819	View southeast at C111-6W soil sample location
7W		C111_4057	8/13/2011	389166	7620781	Sampling location C111-7W located downgradient of Tier II DF
MW7		C111_4058	8/13/2011	389066	7620788	View southeast at C111-7W soil sample location
8W		C111_4060	8/13/2011	389048	7620730	Sampling location C111-8W located downgradient of Tier II DF
MW8		C111_4061	8/13/2011	389044	7620734	View southeast at C111-8W soil sample location

7.6 THERMAL MONITORING DATA

All thermistors at the Tier II Soil Disposal Facility were inspected and found to be in good condition with no significant concerns identified. Data from all thermistors was successfully retrieved. Analogues/thermocouples at all locations were observed to be functioning properly at the time of the inspection. Further review of the downloaded data identified no significant errors in temperature readings obtained during the recording period. All clocks exhibited slight drifts and were synchronized using the Prolog software.

Good to excellent battery levels were noted at all locations with no battery replacements anticipated for the 2012 monitoring period.

7.7 LANDFILL TEMPERATURE DATA FROM DATALOGGERS

Manual resistive and temperature data readings were collected from the thermistor strings as per the ToR. Manual readings and inspection results for each thermistor are presented on the Thermistor Annual Maintenance Reports included in the report. A complete datalogger RAW data set for the 2010-2011 period has been forwarded to DCC as per the ToR.

7.8 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results and the evaluation of analytical data for the 2011 Tier II Soil Disposal Facility samples are presented in Tables XIX and XX below. Field and inter-laboratory duplicates collected as part of the QA/QC program are presented in Appendix C at the end of this report.

Table XIX: Soil Chemical Analysis Results – Tier II Soil Disposal Facility

Sample Name	Sampling Date	Depth (cm)	Cu [mg/kg]	Ni [mg/kg]	Co [mg/kg]	Cd [mg/kg]	Pb [mg/kg]	Zn [mg/kg]	Cr [mg/kg]	As [mg/kg]	Hg [mg/kg]	PCBs [mg/kg]	F1 C_8-C_{10} [mg/kg]	F1 (C_6-C_{10}) - BTEX	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]
C111-5WA	8/13/2011	0-15	<5	2	1	<0.1	10	49	3	3	<0.05	0.070	<20	<12	<10	<10
C111-5WB	8/13/2011	40-50	5	3	1	<0.1	5	21	4	2	<0.05	<0.010	<20	<12	<10	<10
C111-6WA	8/13/2011	0-15	<5	2	1	<0.1	6	<10	3	3	<0.05	<0.010	<20	<12	<10	<10
C111-6WB	8/13/2011	40-50	<5	3	2	<0.1	4	<10	6	2	<0.05	<0.010	<20	<12	<10	<10
C111-7WA	8/13/2011	0-15	<5	2	<1	<0.1	3	<10	3	1	<0.05	<0.010	<20	<12	<10	<10
C111-7WB	8/13/2011	40-50	<5	3	1	<0.1	3	<10	4	2	<0.05	<0.010	<20	<12	<10	<10
C111-8WA	8/13/2011	0-15	<5	2	1	<0.1	3	<10	3	1	<0.05	<0.010	<20	<12	<10	<10
C111-8WB	8/13/2011	40-50	<5	3	2	<0.1	5	<10	6	2	<0.05	<0.010	<20	<12	<10	<10
C111-BD1	8/13/2011	40-50	<5	8	1	<0.1	4	<10	16	2	<0.05	<0.010	<20	<12	<10	<10

S/P/CD/9229/CAM-1/2011/T/Analysis.xls

Table XX: Evaluation of 2011 Soil Analytical Data – Tier II Soil Disposal Facility

Parameter	2011
Copper	Detectable concentration of 5 mg/kg was noted in one depth sample collected at MW-5 located upgradient of the facility. All other reported concentrations were less than the method detection limit (5 mg/kg).
Nickel	Detectable concentrations were noted at all sample locations, ranging between 2-3 mg/kg with a mean of 2.5. The more elevated concentration (3 mg/kg) was observed at depth at each location, whereas the lower concentration (2 mg/kg) was observed at surface.
Cobalt	Concentrations ranged between <1-2 mg/kg with a mean of 1.3. The most elevated concentrations were observed in each of the depth samples at MW-6 and MW-8 (downgradient locations) with non-detectable concentrations noted at surface at MW-7.
Cadmium	All reported concentrations were less than the method detection limit (0.1 mg/kg).
Lead	Concentrations ranged between 3-10 mg/kg with a mean of 4.9. Trace concentrations were observed at all locations with higher concentrations noted at surface at MW-5 (10 mg/kg) upgradient, and MW-6 (6 mg/kg) downgradient. Detectable concentrations at all other locations ranged between 3-5 mg/kg.
Zinc	Detectable concentrations were noted at only the upgradient location MW-5. Concentrations of 49 mg/kg and 21 mg/kg were noted at surface and depth, respectively. All other samples had concentrations less than the detection limit of 10 mg/kg.
Chromium	Concentrations ranged between 3-6 mg/kg with a mean of 4.0. Slightly elevated concentrations of 6 mg/kg were observed at depth at downgradient locations MW-6 and MW-8. Concentrations at all other locations ranged between 3-4 mg/kg.
Arsenic	Detectable concentrations were noted at all sample locations, ranging between 1-3 mg/kg and having a mean of 2.0. The highest concentration of 3 mg/kg was noted at surface at MW-5 (upgradient location) and MW-6 (downgradient location).
Mercury	All reported concentrations were less than the method detection limit (0.05 mg/kg).
PCBs	A detectable concentration of 0.07 mg/kg was noted at surface at MW-5, located upgradient of the facility. All other reported concentrations were less than the method detection limit (0.05 mg/kg)
TPH	All reported concentrations were less than the method detection limit (10-12 mg/kg).

7.9 GROUNDWATER SAMPLE ANALYTICAL DATA

As noted above, all monitoring wells at the Tier II Soil Disposal Facility were dry at the time of monitoring and consequently were not sampled during the 2011 field program.

7.10 THERMISTOR ANNUAL MAINTENANCE REPORTS

The thermistor annual maintenance reports VT-1 to VT-4 are presented in this section.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**8/13/2011**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-1**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-1**		Inclination		**Vertical**		
Install Date:	**xx/xx/2009**		First Date Event		**xx/xx/2009**	Last Date Event	**8/22/2010**
Coordinates and Elevation	N	**7620734.0**	E	**389089.0**	Elev		**35.9**
Length of Cable (m)	**11.7**	Cable Lead Above Ground (m)	**3.25**	Nodal Points			**16**
Datalogger Serial #	**07060015**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance
Casing	**Yes**	**No**
Cover	**Yes**	**No**
Data Logger	**Yes**	**No**
Cable	**Yes**	**No**
Beads	**Yes**	**No**
Battery Installation Date	**xx/xx/2009**	
Battery Levels	Main **11.34 V**	Aux **13.75**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11.883	6.4844
2	13.170	4.4080
3	14.662	2.2683
4	16.723	-0.2982
5	18.069	-1.7998
6	19.540	-3.3266
7	20.510	-4.2967
8	21.44	-5.1183

Bead	ohms	Degrees C
9	22.40	-5.9651
10	23.20	-6.6314
11	23.86	-7.1671
12	24.39	-7.5912
13	24.95	-8.0183
14	25.32	-8.2973
15	25.48	-8.6227
16	26.03	-8.7804

Observations and Proposed Maintenance

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Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**8/13/2011**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-1**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-2**		Inclination		**Vertical**		
Install Date:	**xx/xx/2009**		First Date Event		**xx/xx/2009**	Last Date Event	**8/22/2010**
Coordinates and Elevation		N	**7620759.5**	E	**389105.5**	Elev	**36.5**
Length of Cable (m)	**11.7**		Cable Lead Above Ground (m)	**6.30**	Nodal Points		**16**
Datalogger Serial #	**07050030**				Cable Serial Number		

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**xx/xx/2009**		
Battery Levels	Main **11.34 V**	Aux **12.90**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	7.324	13.3565
2	7.813	12.0537
3	7.521	13.5802
4	7.910	12.8789
5	8.189	12.2951
6	10.376	8.3677
7	11.835	6.4694
8	13.086	4.5078

Bead	ohms	Degrees C
9	14.65	2.2482
10	16.75	0.0000
11	18.153	-1.9432
12	19.257	-3.0765
13	20.76	-4.5820
14	21.91	-5.6102
15	22.82	-6.3868
16	23.50	-6.9424

Observations and Proposed Maintenance

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Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**8/13/2011**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-1**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-3**		Inclination		**Vertical**		
Install Date:	**xx/xx/2009**		First Date Event		**xx/xx/2009**	Last Date Event	**8/22/2010**
Coordinates and Elevation	N	**7620735.5**	E	**389140.5**	Elev		**36.4**
Length of Cable (m)	**11.7**	Cable Lead Above Ground (m)	**3.30**	Nodal Points			**16**
Datalogger Serial #	**07050003**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**xx/xx/2009**		
Battery Levels	Main **11.34 V**	Aux **13.75**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.213	5.9101
2	13.414	4.0885
3	15.106	1.7264
4	16.904	-0.5117
5	18.211	-1.9437
6	19.797	-3.3525
7	20.880	-4.6137
8	21.96	-5.5405

Bead	ohms	Degrees C
9	22.65	-6.1756
10	23.48	-6.8659
11	24.15	-7.3760
12	24.69	-7.7850
13	25.20	-8.1688
14	25.64	-8.4878
15	26.04	-8.7578
16	26.09	-8.8425

Observations and Proposed Maintenance

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Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**8/13/2011**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-1**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-4**		Inclination		**Vertical**		
Install Date:	**xx/xx/2009**		First Date Event		**xx/xx/2009**	Last Date Event	**8/22/2010**
Coordinates and Elevation	N	**7620749.0**	E	**389124.5**	Elev		**36.7**
Length of Cable (m)	**9.2**	Cable Lead Above Ground (m)	**3.45**	Nodal Points			**13**
Datalogger Serial #	**07050006**			Cable Serial Number			

Thermistor Inspection

	Good	Needs Maintenance	
Casing	**Yes**	**No**	
Cover	**Yes**	**No**	
Data Logger	**Yes**	**No**	
Cable	**Yes**	**No**	
Beads	**Yes**	**No**	
Battery Installation Date	**xx/xx/2009**		
Battery Levels	Main **11.34 V**	Aux **13.50**	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.681	12.9359
2	9.567	10.7843
3	11.404	7.3046
4	12.395	5.5108
5	13.659	3.6541
6	15.324	1.3493
7	16.996	-0.6389
8	18.026	-1.7638

Bead	ohms	Degrees C
9	19.36	-3.1442
10	21.19	-4.9320
11	22.37	-5.9381
12	23.05	-6.5008
13	23.75	-7.0684
14	-	-
15	-	-
16	-	-

Observations and Proposed Maintenance

Download File: SITE_001_07050006_Aug_13_2011

7.11 MONITORING WELL SAMPLING/INSPECTION LOGS

The monitoring well sampling and inspection logs for MW-5 to MW-8 are presented in this section.

2011 Monitoring Well Sampling Log (MW-5)

Site name:	CAM-1
Date of sampling event:	13-Aug-11
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-5
Facility:	Tier II Disposal Facility

Known Data

Depth of installation* (m):	4.60
Length of screened section (m):	3.00
Depth to top of screen* (m):	0.50

Measured Data

Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	- (dry)
Well height above ground (m):	0.31	Depth to bottom (m):	1.58
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	-	Evidence of sludge:	no
Well volume of water (L):	-	Evidence of freezing/siltation:	trace
Static water level* (m):	-		
Length of screen collecting water (m):	-		

Development/Purging Information

Equipment:	N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
-	-	-	-	-	-	-

Water Sampling		Soil Sampling	
Date & Time Collected:	-	Date and Time Collected:	13-Aug-11
Sample Number - Water:		Sample Number - Soil:	C111-5WA
			C111-5WB
Sample Containers:		Sample Containers:	3x125mL glass
			3x125mL glass
Procedure/Equipment:		Procedure/Equipment:	Steel & Plastic Trowels
Water Description:		Soil Description:	Brown sand, fine gr., with gravel, trace silt, dry
Sampling Equipment Decontamination (Y/N):	N/A	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	-	Number Washes:	1
Number Rinses:	-	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
LDPE=Low Density Polyethylene
SS=Stainless Steel
C&C = Clear & Colourless
N/O = No Odour

2011 Monitoring Well Sampling Log (MW-6)

Site name:	CAM-1				
Date of sampling event:	13-Aug-11				
Names of samplers:	Andrew Passalis				
Monitoring well ID:	MW-6				
Facility:	Tier II Disposal Facility				
Known Data					
Depth of installation* (m):	4.65				
Length of screened section (m):	3.00				
Depth to top of screen* (m):	0.50				
Measured Data					
Condition of well:	Good		Procedure/Equipment:	Interface Meter	
Procedure/Equipment:	Measuring Tape		Depth to water surface (m):	- (dry)	
Well height above ground (m):	0.53		Depth to bottom (m):	1.57	
Diameter of well (m):	0.04		Free product thickness (mm):	-	
Calculations			**Notes**		
Depth of water (m):	-		Evidence of sludge:	no	
Well volume of water (L):	-		Evidence of freezing/siltation:	trace	
Static water level* (m):	-				
Length of screen collecting water (m):	-				
Development/Purging Information					
Equipment:	N/A				
Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
-	-	-	-	-	-	-
Water Sampling			**Soil Sampling**		
Date & Time Collected:	-		Date and Time Collected:	13-Aug-11	
Sample Number - Water:			Sample Number - Soil:	C111-6WA	
				C111-6WB (Inter QA)	
				C311-BD1 (6WB)	
Sample Containers:			Sample Containers:	3x125mL glass	
				8x125mL glass	
				3x125mL glass	
Procedure/Equipment:			Procedure/Equipment:	Steel & Plastic Trowels	
Water Description:			Soil Description:	Brown/grey sand, f-cw grained, some gravel, dry	
Sampling Equipment Decontamination (Y/N):	N/A		Sampling Equipment Decontamination (Y/N):	Y	
Number Washes:	-		Number Washes:	1	
Number Rinses:	-		Number Rinses:	1	

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
LDPE=Low Density Polyethylene
SS=Stainless Steel
C&C = Clear & Colourless
N/O = No Odour

2011 Monitoring Well Sampling Log (MW-7)

Site name:	CAM-1
Date of sampling event:	13-Aug-11
Names of samplers:	Andrew Passalis
Monitoring well ID:	MW-7
Facility:	Tier II Disposal Facility

Known Data

Depth of installation* (m):	4.70
Length of screened section (m):	3.00
Depth to top of screen* (m):	0.50

Measured Data

Condition of well:	Good	Procedure/Equipment:	Interface Meter
Procedure/Equipment:	Measuring Tape	Depth to water surface (m):	- (dry)
Well height above ground (m):	0.51	Depth to bottom (m):	1.47
Diameter of well (m):	0.04	Free product thickness (mm):	-

Calculations		Notes	
Depth of water (m):	-	Evidence of sludge:	no
Well volume of water (L):	-	Evidence of freezing/siltation:	trace
Static water level* (m):	-		
Length of screen collecting water (m):	-		

Development/Purging Information

Equipment:	N/A

Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
-	-	-	-	-	-	-

Water Sampling		Soil Sampling	
Date & Time Collected:	-	Date and Time Collected:	13-Aug-11
Sample Number - Water:		Sample Number - Soil:	C111-7WA
			C111-7WB
Sample Containers:		Sample Containers:	3x125mL glass
			3x125mL glass
Procedure/Equipment:		Procedure/Equipment:	Steel & Plastic Trowels
Water Description:		Soil Description:	Brown sand, f-med. grained, with gravel, trace silt, dry
Sampling Equipment Decontamination (Y/N):	N/A	Sampling Equipment Decontamination (Y/N):	Y
Number Washes:	-	Number Washes:	1
Number Rinses:	-	Number Rinses:	1

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
LDPE=Low Density Polyethylene
SS=Stainless Steel
C&C = Clear & Colourless
N/O = No Odour

2011 Monitoring Well Sampling Log (MW-8)

Site name:	CAM-1				
Date of sampling event:	13-Aug-11				
Names of samplers:	Andrew Passalis				
Monitoring well ID:	MW-8				
Facility:	Tier II Disposal Facility				
Known Data					
Depth of installation* (m):	4.80				
Length of screened section (m):	3.00				
Depth to top of screen* (m):	0.50				
Measured Data					
Condition of well:	Good		Procedure/Equipment:	Interface Meter	
Procedure/Equipment:	Measuring Tape		Depth to water surface (m):	- (dry)	
Well height above ground (m):	0.48		Depth to bottom (m):	1.59	
Diameter of well (m):	0.04		Free product thickness (mm):	-	
Calculations			**Notes**		
Depth of water (m):	-		Evidence of sludge:	no	
Well volume of water (L):	-		Evidence of freezing/siltation:	trace	
Static water level* (m):	-				
Length of screen collecting water (m):	-				
Development/Purging Information					
Equipment:	N/A				
Date & Time	Volume Removed (L)	Temperature (^{o}C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	Description of Water
-	-	-	-	-	-	-
Water Sampling			**Soil Sampling**		
Date & Time Collected:	-		Date and Time Collected:	13-Aug-11	
Sample Number - Water:			Sample Number - Soil:	C111-8WA	
				C111-8WB	
Sample Containers:			Sample Containers:	3x125mL glass	
				3x125mL glass	
Procedure/Equipment:			Procedure/Equipment:	Steel & Plastic Trowels	
Water Description:			Soil Description:	Brown sand, f-med. grained, with gravel, trace silt, dry	
Sampling Equipment Decontamination (Y/N):	N/A		Sampling Equipment Decontamination (Y/N):	Y	
Number Washes:	-		Number Washes:	1	
Number Rinses:	-		Number Rinses:	1	

*From ground surface. Unless this is stated, all measurments are assumed to be from the top of the casing.
n/a=not applicable
LDPE=Low Density Polyethylene
SS=Stainless Steel
C&C = Clear & Colourless
N/O = No Odour

8 SOUTHEAST LANDFILL

8.1 BACKGROUND AND MONITORING PROGRAM

The Southeast Landfill (SELF) area is located approximately 125 m to the southeast of the Tier II Soil Disposal Facility. The landfill has two separate regrade areas (labelled as Lobes 1 and 2, and including engineered cover, encompasses a footprint of approximately 2,900 m^2 with the final cover extending approximately 1.0 to 1.5 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Southeast Landfill was classified as low potential environmental risk. The remediation consisted in the removal of surface debris and localized contaminated areas and regrading with the placement of additional granular fill.

The long term monitoring plan consists in visual monitoring and periodic collection of soil samples. The 2011 monitoring of this landfill includes a visual inspection and soil sample collection to assess landfill performance. There is no instrumentation installed at this landfill.

8.2 VISUAL INSPECTION REPORT

The visual inspection of the Southeast Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XXVII of this report.

Settlement
An indication of minor localized settlement was noted on the north side of Lobe 2. (Feature A). The feature consisted of a linear depression on the north margin of the regrade area. The settlement feature has an acceptable severity rating and was not noted during the previous 2010 assessment.

Erosion
No indications of erosion were noted.

Frost Action
No indications of frost action were noted. Please see Other Features of Note below.

Evidence of Burrowing Animals
No signs of burrowing animals were noted.

Re-establishment of Vegetation
No sign of vegetation was noted on the landfill.

Staining
No areas of staining were noted at the landfill.

Seepage Points
No evidence of specific seepage points was noted.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
No monitoring instruments are installed at this landfill.

Other Features of Note

A pair of shallow vehicle tracks/ruts were observed on the west corner of Lobe 1. The vehicle tracks/ruts extended 0.05 m in depth and covered less than 1% of the landfill surface.

Discussion

The Southeast Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawings, is presented in the following pages.

Table XXI: Visual Inspection Checklist / Report – Southeast Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 OF 2

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: Southeast Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Southeast Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature:

TABLE <>: CAM-1 JENNY LIND ISLAND, SOUTHEAST LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-1.7 (N side slope - Lobe 2 New Obs)	2.5 m	0.15 m	0.03 - 0.05 m	Isolated (<1%)	Minor depression	SELF-17, 18	Acceptable	Side slope appears stable.
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	See Figure CAM-1.7 (W side slope - New Obs)	1 - 3 m	0.15 m	0.05 m	Isolated (<1%)	Vehicle ruts	SELF-4, 5	Acceptable	N/A
Additional Photos	Yes	See Figure CAM-1.7 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

8.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Southeast Landfill has been completed as per the ToR and is included as Table XXI hereafter.

Table XXII: Preliminary Stability Assessment – Southeast Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of the landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.

Extent	Description
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

8.4 LOCATION PLAN

The Location Plan for the Southeast Landfill has been completed as per the ToR and is presented in Figure CAM-1.7.

N
W E
S

389 200 E
389 250 E
389 300 E

7 620 600 N
7 620 550 N

ACCESS TRAIL

FEATURE A — MINOR DEPRESSION
2.5m L, 0.15m W, 0.03–0.05m D

SOUTHEAST
LANDFILL–LOBE 2

SOUTHEAST
LANDFILL–LOBE 1

VEHICLE RUTS
1–3m L, 0.15m W, 0.05m D

30m
31m
29m
28m

LEGEND

- 270 — COORDINATE POINT
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–10–25	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

SOUTHEAST LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 500	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.7-PL	PAGE PL

FIGURE CAM-1.7

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8.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Southeast Landfill has been completed as per the ToR and is included as Table XXIV hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

TABLE XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: Southeast Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
Lobe 1						
1		C111_4104	8/13/2011	389244	7620586	Panoramic view looking east-southeast to southwest from northwest corner across Lobe 1
2		C111_4105	8/13/2011	389242	7620591	View looking southwest along northwest toe of Lobe 1
3		C111_4106	8/13/2011	389243	7620591	View looking east-southeast along north toe of Lobe 1
4		C111_4107	8/13/2011	389214	7620562	View looking northwest at vehicle ruts on west side slope of Lobe 1 (1-3m L, 0.15m W, 0.05m D)
5		C111_4108	8/13/2011	389208	7620568	View looking southeast at vehicle ruts on west side slope of Lobe 1 (1-3m L, 0.15m W, 0.05m D)
6		C111_4109	8/13/2011	389207	7620563	View looking northeast along northwest toe of Lobe 1
7		C111_4110	8/13/2011	389207	7620562	View looking south along west toe of Lobe 1
8		C111_4111	8/13/2011	389209	7620538	Panoramic view looking north-northwest to east from south corner across Lobe 1
9		C111_4112	8/13/2011	389204	7620535	View looking north along west toe of Lobe 1
10		C111_4113	8/13/2011	389207	7620533	View looking northeast along southeast toe of Lobe 1
11		C111_4114	8/13/2011	389269	7620570	Panoramic view looking southwest to north from east corner across Lobe 1
12		C111_4115	8/13/2011	389271	7620566	View looking southwest along southeast toe of Lobe 1
13		C111_4116	8/13/2011	389266	7620582	View looking southwest from northeast side along centerline of Lobe 1
Lobe 2						
14		C111_4094	8/13/2011	389227	7620633	Panoramic view looking southeast to southwest from north corner across Lobe 2

15		C111_4095	8/13/2011	389226	7620634	View looking south-southwest along west toe of Lobe 2
16		C111_4096	8/13/2011	389227	7620635	View looking southeast along northeast toe of Lobe 2
17		C111_4097	8/13/2011	389228	7620633	Minor depression on north side slope of Lobe 2 (2.5m L, 0.15m W, 0.03-0.05m D) - Feature A
18		C111_4098	8/13/2011	389224	7620636	View looking east at minor depression on north side slope of Lobe 2 (2.5m L, 0.15m W, 0.03-0.05m D) - Feature A
19		C111_4099	8/13/2011	389242	7620624	View looking northwest along northeast toe of Lobe 2
20		C111_4100	8/13/2011	389242	7620623	View looking south along east toe of Lobe 2
21		C111_4101	8/13/2011	389242	7620609	View looking north along east toe of Lobe 2
22		C111_4102	8/13/2011	389242	7620608	View looking west along south toe of Lobe 2
23		C111_4103	8/13/2011	389238	7620611	Panoramic view looking southwest to north-northeast from south corner across Lobe 2
Aerial						
A7		C111_3988	8/13/2011	388966	7620702	Aerial view looking east southeast at Southeast Landfill.

9 MAIN LANDFILL

9.1 BACKGROUND AND MONITORING PROGRAM

The Main Landfill is located approximately 300 m east-southeast of the former station infrastructure pad and 75 m to the southwest of the Station East Landfill. The landfill forms a slight topographic high within a relatively flat lying area east of the former station. The landfill has a single regrade area encompassing a footprint of approximately 12,500 m^2 with the final cover extending approximately 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Main Landfill was classified as low potential environmental risk. The remediation consisted in regrading by adding granular fill.

The long-term monitoring plan consists of visual monitoring and collecting soil samples.

The 2011 monitoring of this landfill includes a visual inspection to assess landfill performance. No instrumentation is installed at this landfill.

9.2 VISUAL INSPECTION REPORT

The visual inspection of the Main Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table VII of this report.

Settlement
No indications of settlement were noted at the landfill.

Erosion
Indications of minor erosion were noted in three general areas (Features A, B and C) on the north west, southwest and northeast margins of the landfill, ranging from 6 to 30 m in length. At each location, the erosion generally consisted of fines washing along the toe of slope and appears to be the result of localized seasonal pounding along the margins of the landfill. These features were dry at the time of the 2011 inspection and appear to be self-armouring with an acceptable severity rating. These features were not noted during the 2010 inspection.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No signs of burrowing animals were noted.

Re-establishment of Vegetation
No sign of vegetation was noted on the landfill.

Staining
No areas of staining were noted at the landfill.

Seepage Points
No areas of seepage were noted at the landfill.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
No monitoring instrumentation is installed at this landfill.

Other Features of Note
No other features were noted at the landfill.

Discussion
The Main Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XXIV: Visual Inspection Checklist / Report – Main Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 – Jenny Lind Island
LANDFILL DESIGNATION: Main Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Main Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, MAIN LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Erosion	Yes	FEATURE A See Figure CAM-1.8 (NW side slope and corner - New Obs)	25 m	0.3 m	0.03 m	Isolated (<1%)	Minor erosion along toe	MLF-3, 4, 7	Acceptable	Washing of fines from seasonal ponding. Slope appears stable
		FEATURE B See Figure CAM-1.8 (SW toe - New Obs)	30 m	0.3 m	0.03 m	Isolated (<1%)	Minor erosion along toe	MLF-9-11	Acceptable	Washing of fines from seasonal ponding. Slope appears stable
		FEATURE C See Figure CAM-1.8 (NE side slope and toe New Obs)	6 - 12 m	0.1 - 1.5 m	0.02 - 0.05 m	Isolated (<1%)	Minor erosion on side slope and along toe	MLF-22, 24, 25	Acceptable	Washing of fines from seasonal ponding. Slope appears stable
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-1.8 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

9.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Main Landfill has been completed as per the ToR and is included as Table V below.

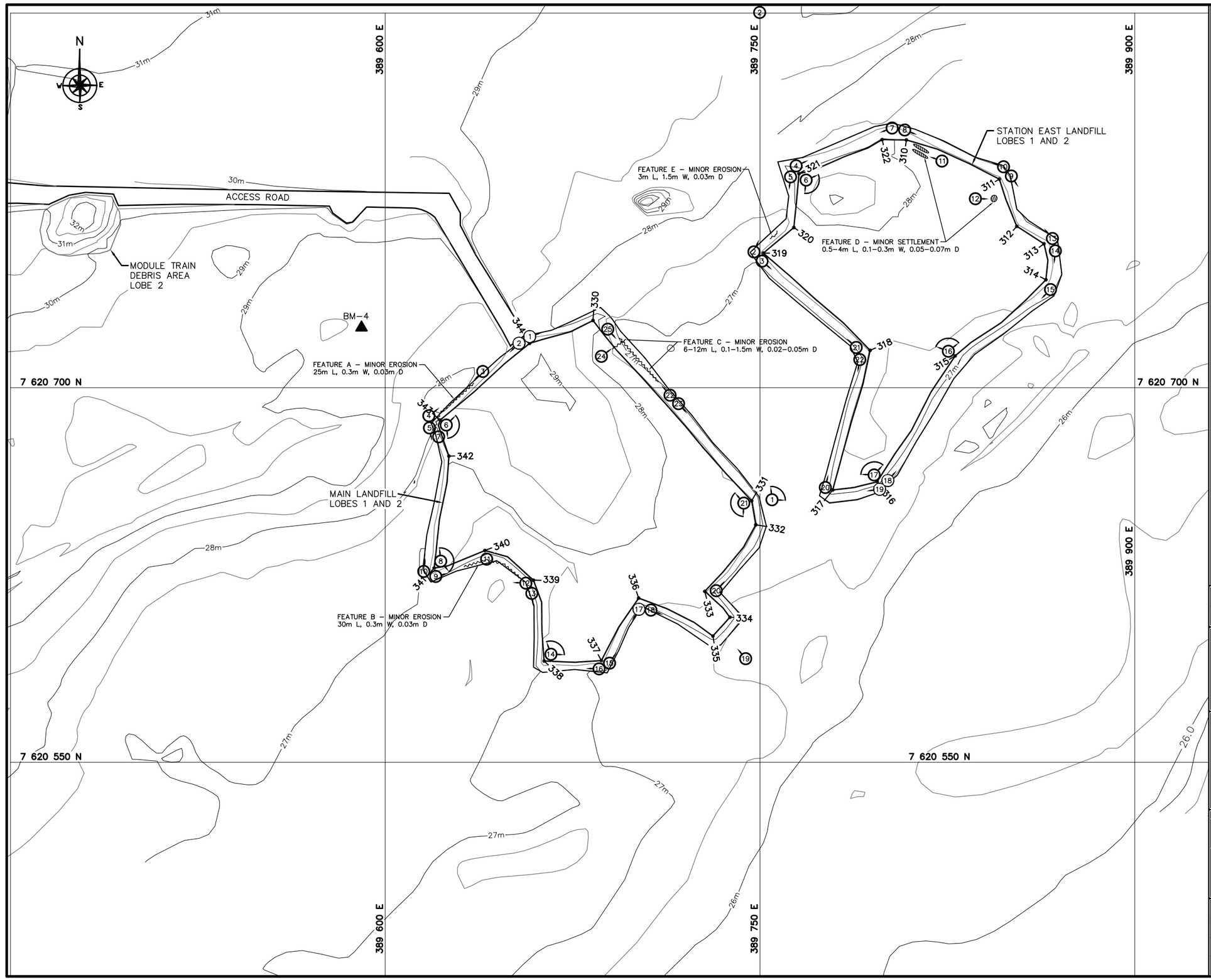
Table XXV: Preliminary Stability Assessment – Main Landfill

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

9.4 LOCATION PLAN

The Location Plan for the Main Landfill has been completed as per the ToR and is presented in Figure CAM-1.8.



LEGEND

- BM–4 — PERMANENT BENCHMARK LOCATION (1)
- 310 — COORDINATE POINT
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)

0 15m 30m 45m 60m 75m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–11–01	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

STATION EAST LANDFILL AND MAIN LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,500	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.8-PL	PAGE PL

FIGURE CAM-1.8

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9.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Main Landfill has been completed as per the ToR and is included as Table XXVII hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full sized photographs are contained in the Addendum DVD-ROM.

TABLE XXVI: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: Cam-1, Jenny Lind Island
Landfill: Main Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
1		C111_4217	8/13/2011	389656	7620720	View looking northeast along northwest side slope of Main LF
2		C111_4218	8/13/2011	389655	7620719	View looking southwest along northwest side slope of Main LF
3		C111_4220	8/13/2011	389639	7620707	View looking southwest along northwest side slope of Main LF. Note minor erosion (fines washing) along toe from seasonal ponding (25m L, 0.3m W, 0.03m D) - Feature A
4		C111_4221	8/13/2011	389618	7620687	View looking northeast along northwest side slope of Main LF. Note minor erosion (fines washing) along toe from seasonal ponding (25m L, 0.3m W, 0.03m D) - Feature A
5		C111_4222	8/13/2011	389617	7620687	View looking south along west toe of Main LF
6		C111_4223	8/13/2011	389623	7620686	Panoramic view looking northeast to south from west corner across Main LF
7		C111_4224	8/13/2011	389621	7620680	Minor erosion (washing of fines) on northwest corner of Main LF (25m L, 1m W, 0.05m D) - Feature A
8		C111_4225	8/13/2011	389622	7620630	Panoramic view looking north to southeast from west side across Main LF
9		C111_4226	8/13/2011	389618	7620625	View looking east-northeast along southwest toe of Main LF. Note minor erosion (fines washing) along toe from seasonal ponding (30m L, 0.3m W, 0.03m D) - Feature B
10		C111_4227	8/13/2011	389618	7620625	View looking north along west toe of Main LF
11		C111_4228	8/13/2011	389641	7620631	Minor erosion (washing of fines) along southwest toe of Main LF (30m L, 0.3m W, 0.03m D) - Feature B
12		C111_4229	8/13/2011	389657	7620620	View looking west along southwest toe of Main LF. Note minor erosion (fines washing) along toe from seasonal ponding (30m L, 0.3m W, 0.03m D) - Feature B
13		C111_4230	8/13/2011	389658	7620619	View looking south along west toe of Main LF
14		C111_4231	8/13/2011	389666	7620593	Panoramic view looking north to east from south side across Main LF
15		C111_4232	8/13/2011	389688	7620589	View looking northeast along south to of Main LF

16		C111_4233	8/13/2011	389687	7620588	View looking west along south toe of Main LF. Note deposition of gravel and cobbles along toe from seasonal ponding
17		C111_4234	8/13/2011	389703	7620611	View looking southwest along south to of Main LF
18		C111_4235	8/13/2011	389704	7620611	View looking southeast along south side slope of Main LF
19		C111_4236	8/13/2011	389744	7620592	View looking northwest at southeast end of Main LF
20		C111_4237	8/13/2011	389732	7620619	View northeast along east side slope of Main LF
21		C111_4238	8/13/2011	389744	7620654	Panoramic view looking south to northwest from south side across Main LF
22		C111_4240	8/13/2011	389715	7620696	View looking northwest along northeast toe of Main LF. Note minor erosion (fines washing) along toe from seasonal ponding (12m L, 0.5-1.5m W, 0.02-0.05m D) - Feature C
23		C111_4241	8/13/2011	389716	7620695	View looking southeast along northeast toe of Main LF
24		C111_4242	8/13/2011	389686	7620712	View looking northeast at minor erosion near northeast corner of Main LF (6m L, 0.1m W, 0.02-0.05m D) - Feature C
25		C111_4243	8/13/2011	389689	7620724	View looking southeast along northeast toe of Main LF. Note minor erosion (fines washing) along toe from seasonal ponding (12m L, 0.5-1.5m W, 0.02-0.05m D) - Feature C
Aerial						
A8		C111_4272	8/13/2011	389330	7620612	Aerial view looking northeast at Main Landfill and Station East Landfill (background)

10 STATION EAST LANDFILL

10.1 BACKGROUND AND MONITORING PROGRAM

The Station East Landfill is located approximately 350 m east of the former station infrastructure pad and 75 m to the northeast of the Main Landfill. The landfill forms a slight topographic high within a relatively flat lying area east of the former station. The landfill has a single regrade area encompassing a footprint of approximately 2,400 m^2 with the final cover extending approximately 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the Station East Landfill was classified as low potential environmental risk. The remediation consisted of removal of surface debris and regrading with the placement of additional granular fill.

The long term monitoring plan consists of visual monitoring and collection of soil samples.

The 2011 monitoring of this landfill includes a visual inspection to assess landfill performance. There is no instrumentation installed at this landfill.

10.2 VISUAL INSPECTION REPORT

The visual inspection of the Station East Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table VII of this report.

Settlement
Indications of minor settlement were noted in two general areas (Feature D) on the north side of the landfill surface. The feature consisted of two shallow linear depressions near the north crest and one localized small depression on the northeast cover area. This feature has an acceptable severity rating. The linear depressions near the north crest were not noted during the previous 2010 inspection.

Erosion
One area of minor erosion was noted along the west margin of the landfill (Feature E). The erosion consisted of fines washing along approximately 3 linear meters of the toe of slope. Erosion appears to be the result of seasonal ponding along the west side of the lobe. This feature was dry at the time of the 2011 inspection and appears to be self-armouring with an acceptable severity rating. This feature was not noted during the previous 2010 inspection.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No signs of burrowing animals were noted.

Re-establishment of Vegetation
No sign of vegetation was noted on the landfill.

Staining
No areas of staining were noted at the landfill.

Seepage Points
No areas of seepage were noted at the landfill.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
No monitoring instrumentation is installed at this landfill.

Other Features of Note
No other features were noted at the landfill.

Discussion
The Station East Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XXVII: Visual Inspection Checklist / Report – Station East Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 – Jenny Lind Island
LANDFILL DESIGNATION: Station East Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: Station East Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, STATION EAST LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE D See Figure CAM-1.8 (N side - one New Obs)	0.5 - 4 m L	0.1 - 0.3 m	0.05 - 0.07 m	Isolated (<1%)	Minor depressions	ELF-8, 11, 12	Acceptable	Cover appears stable.
Erosion	Yes	FEATURE E See Figure CAM-1.8 (W toe - New Obs)	3 m	1.5 m	0.03 m	Isolated (<1%)	Minor erosion	ELF-2	Acceptable	Minor washing of fines along toe resulting from seasonal ponding
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-1.8 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

10.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Station East Landfill has been completed as per the ToR and is included as Table V below.

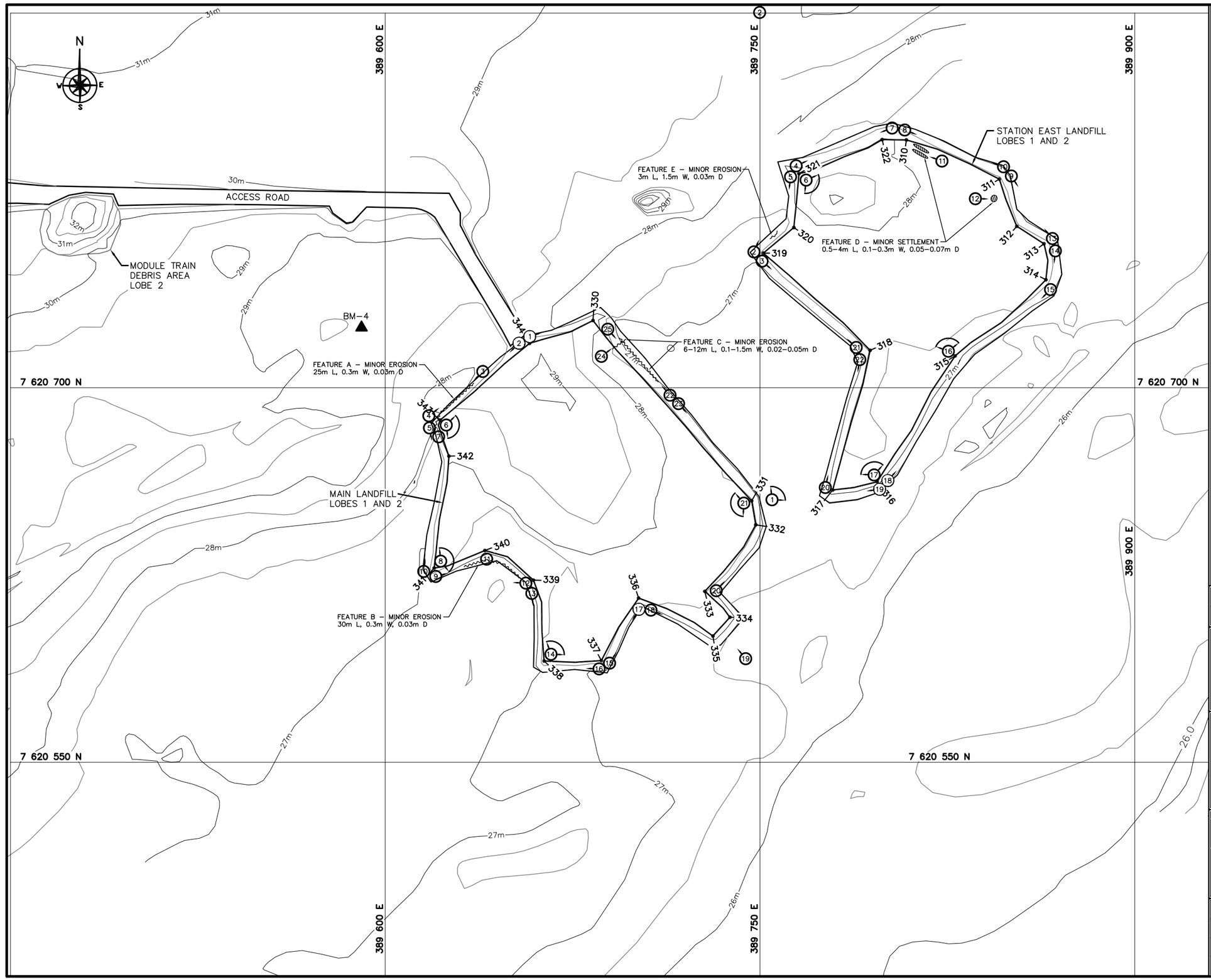
Table XXVIII: Preliminary Stability Assessment – Station East Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

10.4 LOCATION PLAN

The Location Plan for the Station East Landfill has been completed as per the ToR and is presented in Figure CAM-1.8.



LEGEND

- BM–4 — PERMANENT BENCHMARK LOCATION (1)
- 310 — COORDINATE POINT
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- MINOR SETTLEMENT (NTS)
- MINOR EROSION (NTS)

0 15m 30m 45m 60m 75m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–11–01	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

STATION EAST LANDFILL AND MAIN LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,500	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.8-PL	PAGE PL

FIGURE CAM-1.8

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10.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Station East Landfill has been completed as per the ToR and is included as Table XXX hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full sized photographs are contained in the Addendum DVD-ROM.

TABLE XXIX: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: Station East Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
1		C111_4239	8/13/2011	389755	7620655	Panoramic view looking north to east from southwest of Station East Landfill
2		C111_4245	8/13/2011	389749	7620753	View looking northeast along west toe of Station East Landfill. Note minor erosion of fines (3m L, 1.5m W, 0.03m D) - Feature E
3		C111_4246	8/13/2011	389749	7620752	View looking southeast along southwest toe of Station East Landfill
4		C111_4247	8/13/2011	389764	7620787	View looking south along west toe of Station East Landfill
5		C111_4248	8/13/2011	389764	7620786	View looking northeast along northwest toe of Station East Landfill
6		C111_4249	8/13/2011	389767	7620784	Panoramic view looking northeast to south from west side across Station East Landfill
7		C111_4250	8/13/2011	389804	7620804	View looking southwest along northwest toe of Station East Landfill
8		C111_4251	8/13/2011	389806	7620803	View looking east-southeast along north toe of Station East Landfill. Note linear depressions on right (2-4m L, 0.1-0.15m W, 0.05-0.07m D) - Feature D
9		C111_4252	8/13/2011	389850	7620786	View looking southeast along northeast toe of Station East Landfill
10		C111_4253	8/13/2011	389849	7620787	View looking northwest along north toe of Station East Landfill
11		C111_4254	8/13/2011	389823	7620791	View looking northwest at area of linear depressions on north side of Station East Landfill (2-4m L, 0.1-0.15m W, 0.05-0.07m D) - Feature D
12		C111_4255	8/13/2011	389836	7620775	View looking east at minor depression on northeast cover area of Station East Landfill (0.5m L, 0.4m W, 0.07 m D) - Feature D
13		C111_4256	8/13/2011	389867	7620760	View looking northwest along northeast toe of Station East Landfill
14		C111_4257	8/13/2011	389868	7620758	View looking south along east toe of Station East Landfill
15		C111_4258	8/13/2011	389866	7620739	View looking southwest along southeast toe of Station East Landfill

16		C111_4259	8/13/2011	389825	7620715	Panoramic view looking northwest to northeast from southeast side across Station East Landfill
17		C111_4260	8/13/2011	389796	7620664	Panoramic view looking west to northeast from south corner across Station East Landfill
18		C111_4261	8/13/2011	389801	7620663	View looking northeast along southeast side sloope of Station East Landfill
19		C111_4262	8/13/2011	389800	7620662	View looking west along south toe of Station East Landfill
20		C111_4263	8/13/2011	389776	7620660	View looking north-northeast along west side slope of Station East Landfill
21		C111_4264	8/13/2011	389789	7620716	View looking northwest along southwest side slope of Station East Landfill
22		C111_4265	8/13/2011	389789	7620715	View looking south along west side slope of Station East Landfill
Aerial						
A8		C111_4272	8/13/2011	389330.4	7620611.6	Aerial view looking east at Main Landfill and Station East Landfill (background)

11 USAF LANDFILL

11.1 BACKGROUND AND MONITORING PROGRAM

The USAF Landfill is located approximately 550 m to the north of the west end of the airstrip. The landfill is located within a relatively flat lying area east of the main access road connecting the airstrip to the main station area. The landfill has two regrade areas, including engineered cover, and encompasses a footprint of approximately 3,000 m^2 with the final cover extending approximately 0.5 to 0.75 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the USAF Landfill was classified as low potential environmental risk.

The remediation consisted in regrading by adding granular fill at all lobes. The long-term monitoring plan consists in visual monitoring and collection of soil samples.

The 2011 monitoring of this landfill includes a visual inspection to assess landfill performance. No instrumentation is installed at this landfill.

11.2 VISUAL INSPECTION REPORT

The visual inspection of the USAF Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XXXI of this report.

Settlement
No indications of settlement were noted.

Erosion
No indications of erosion were noted.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No indications of burrowing animals were noted.

Re-establishment of Vegetation
No indication of vegetation was noted on the landfill.

Staining
No areas of staining were noted at the landfill.

Seepage Points
No areas of seepage were noted at the landfill.

Debris
No debris was noted at the landfill.

Presence/Condition of Monitoring Instruments
No monitoring instrumentation is installed at this landfill.

Other Features of Note
No other features were noted at the landfill.

Discussion
The USAF Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. Visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XXX: Visual Inspection Checklist / Report – USAF Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 OF 2

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: USAF Landfill (Regrade Landfill)
DATE OF INSPECTION: August 13, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: USAF Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, USAF LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-1.9 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

11.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for USAF Landfill has been completed as per the ToR and is included as Table XXXII hereafter.

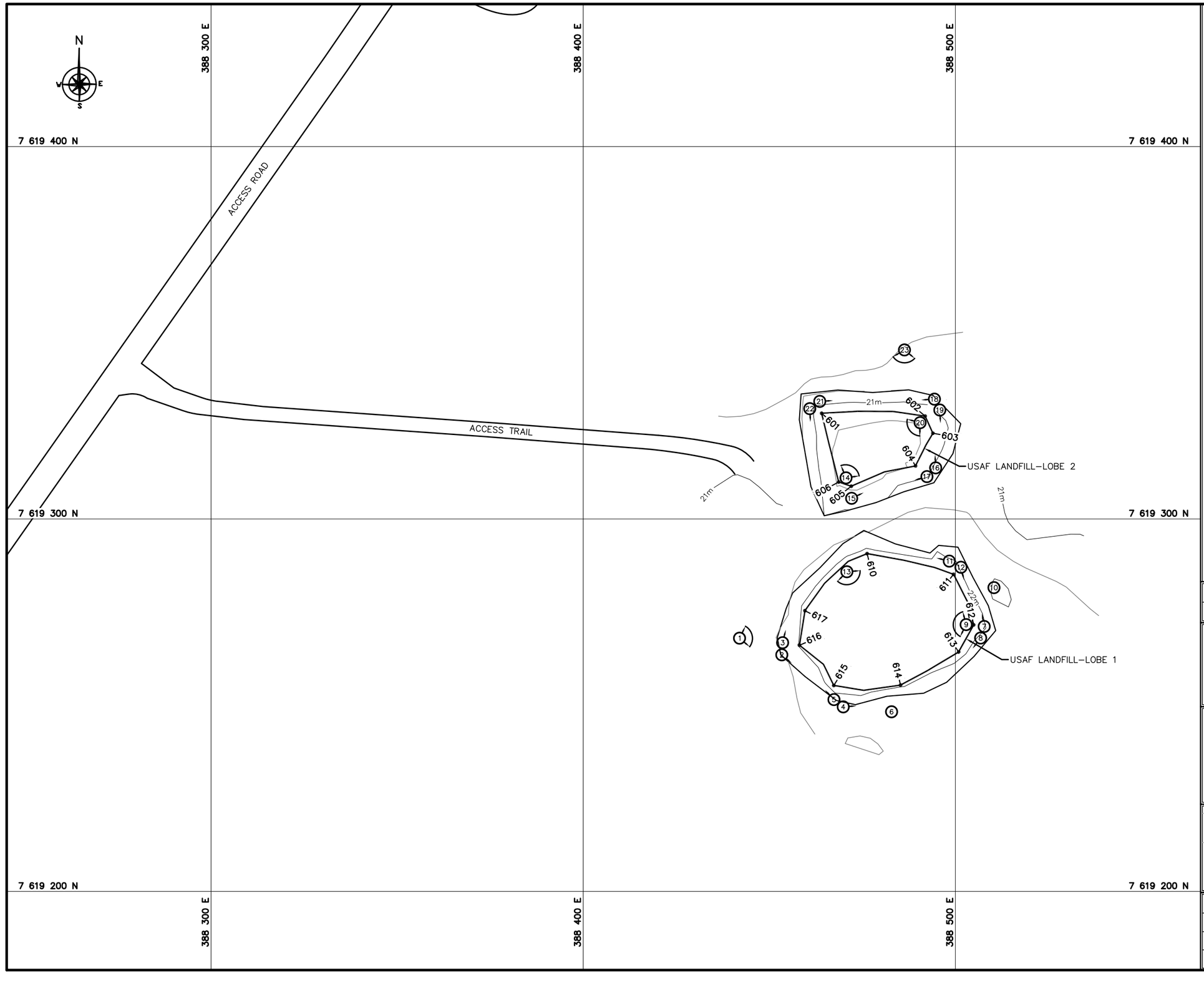
Table XXXI: Preliminary Stability Assessment – USAF Landfill

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

11.4 LOCATION PLAN

The Location Plan for the USAF Landfill has been completed as per the ToR and is presented in Figure CAM-1.9.



LEGEND

601 COORDINATE POINT

6 APPROX. PHOTOGRAPHIC VIEWPOINT

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11–10–27	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

USAF LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	1 : 1,000	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL–GAGNON	APPROVED BY: J.–P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.9-PL	PAGE PL

FIGURE CAM-1.9

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11.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the USAF Landfill has been completed as per the ToR and is included as Table XXXIII hereafter. The Photographic Record only contains an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

TABLE XXXII: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: USAF Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
Lobe 1						
1		C111_4022	8/13/2011	388442	7619267	Panoramic view looking northeast to southeast from west of USAF LF - Lobe 1
2		C111_4023	8/13/2011	388453	7619265	View looking southeast along southwest side slope of USAF LF - Lobe 1
3		C111_4024	8/13/2011	388453	7619266	View looking north-northeast along west side slope of USAF LF - Lobe 1
4		C111_4025	8/13/2011	388469	7619250	View looking east along south toe of USAF LF - Lobe 1
5		C111_4026	8/13/2011	388469	7619250	View looking northwest along southwest toe of USAF LF - Lobe 1
6		C111_4027	8/13/2011	388482	7619248	Corner marker post for USAF landfill located south of USAF LF
7		C111_4028	8/13/2011	388507	7619270	View looking north-northwest along east side slope of USAF LF - Lobe 1. Note landfill marker post on right of photo
8		C111_4029	8/13/2011	388507	7619269	View looking southwest along southeast side slope of USAF LF - Lobe 1
9		C111_4030	8/13/2011	388503	7619272	Panoramic view looking southwest to northwest from east side of USAF LF - Lobe 1
10		C111_4031	8/13/2011	388510	7619282	Corner marker post for USAF landfill located east of USAF LF - Lobe 1
11		C111_4032	8/13/2011	388500	7619288	View looking west-northwest along north toe of USAF LF - Lobe 1
12		C111_4033	8/13/2011	388500	7619288	View looking south-southeast along east side slope of USAF LF - Lobe 1
13		C111_4034	8/13/2011	388471	7619286	Panoramic view looking east to southwest from north side of USAF LF - Lobe 1
Lobe 2						
14		C111_4035	8/13/2011	388470	7619311	Panoramic view looking northwest to east from southwest corner of USAF LF - Lobe 2

15		C111_4036	8/13/2011	388472	7619306	View looking northeast along south side slope of USAF LF - Lobe 2
16		C111_4037	8/13/2011	388494	7619313	View looking north along east side slope of USAF LF - Lobe 2
17		C111_4038	8/13/2011	388493	7619313	View looking southwest along south side slope of USAF LF - Lobe 2
18		C111_4039	8/13/2011	388495	7619332	View looking west along north side slope of USAF LF - Lobe 2
19		C111_4040	8/13/2011	388496	7619331	View looking south along east side slope of USAF LF - Lobe 2
20		C111_4041	8/13/2011	388491	7619326	Panoramic view looking south to northwest from northeast corner of USAF LF - Lobe 2
21		C111_4042	8/13/2011	388463	7619331	View looking east along north side slope of USAF LF - Lobe 2
22		C111_4043	8/13/2011	388462	7619331	View looking south along west toe of USAF LF - Lobe 2
23		C111_4044	8/13/2011	388486	7619345	Panoramic view looking southeast to southwest from north of USAF LF - Lobe 2
Aerial						
A9		C111_3986	8/13/2011	388338.9	7619623.6	Aerial view looking southeast at USAF Landfill

12 EAST LANDING LANDFILL

12.1 BACKGROUND AND MONITORING PROGRAM

The East Landing Landfill is located approximately 200 m southeast of the beach SRR POL refuel tanks and ranges between 20 to 40 m from the ocean's edge. With cover material, the single regrade area of the landfill encompasses a footprint of approximately 2,200 m^2 with the final cover extending approximately 0.75 m to 3.0 m above the surrounding grade. Based on existing information regarding this landfill as a source of contamination, its potential migration pathways and receptors, the East Landing Landfill was classified as low potential environmental risk. The remediation consisted of regrading with the placement of additional granular fill and erosion protection along the downgradient slope.

The long-term monitoring plan consists in visual monitoring and periodic collection of soil samples. The 2011 monitoring of this landfill includes a visual inspection. No instrumentation has been installed at this landfill.

12.2 VISUAL INSPECTION REPORT

The visual inspection of the East Landing Landfill was conducted on August 13, 2011. The Visual Inspection Checklist/Report has been completed as per the ToR and is included as Table XXXVIII of this report.

Settlement
No indications of settlement were noted.

Erosion
No indications of erosion were noted.

Frost Action
No evidence of frost action was noted.

Evidence of Burrowing Animals
No indications of burrowing animals were noted.

Re-establishment of Vegetation
No indications of vegetation were noted.

Staining
No areas of staining were observed at the time of the inspection.

Seepage Points
There is no seepage point at this landfill.

Debris
No debris was noted.

Presence/Condition of Monitoring Instruments
No monitoring instrument is installed at this landfill.

Other Features of Note
There was no other feature of note.

Discussion

The East Landing Landfill performance with respect to containment of the debris within the landfill is rated as acceptable. A visual inspection report, including supporting photos and drawing, is presented in the following pages.

Table XXXIII: Visual Inspection Checklist / Report – East Landing Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-1 Jenny Lind Island
LANDFILL DESIGNATION: East Landing Landfill (Regrade Landfill)
DATE OF INSPECTION: August 14, 2011
DATE OF PREVIOUS INSPECTION: August 21/22, 2010
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
The inspector/reporter represents to the best of his/her knowledge that the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

LANDFILL VISUAL INSPECTION

Site Name: CAM-1 JENNY LIND ISLAND
Landfill: East Landing Landfill
Designation: Existing Regrade Area
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis, P.Eng.
EGE Engineering Ltd.

Signature: 

CAM-1 JENNY LIND ISLAND, EAST LANDING LANDFILL

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Erosion	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-1.10 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	Not Observable	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

12.3 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for East Landing Landfill has been completed as per the ToR and is included as Table XXXIX hereafter.

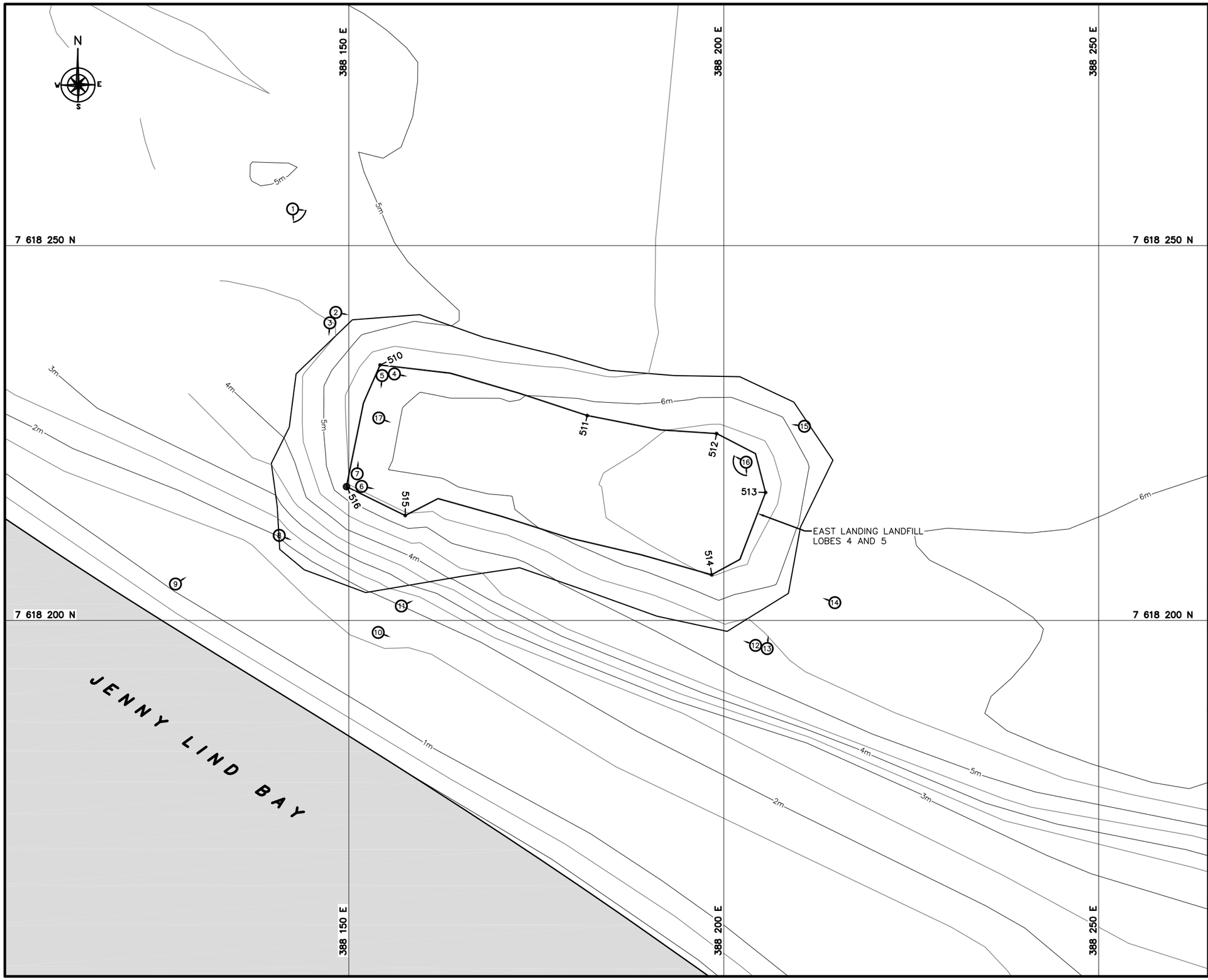
Table XXXIV: Preliminary Stability Assessment – East Landing Landfill

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Not observed	None
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.
Extent	**Description**
Isolated	Singular feature
Occasional	Features of note occurring at irregular intervals/locations
Numerous	Many features of note, impacted less than 50% of the surface area of the landfill
Extensive	Impacting greater than 50% of the surface area of the landfill

12.4 LOCATION PLAN

The Location Plan for the East Landing Landfill has been completed as per the ToR and is presented in Figure CAM-1.7.



LEGEND

- 510 — COORDINATE POINT
- 6 — APPROX. PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	PRELIMINARY	11-10-27	P.L.	J.M.G.	J.P.P.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-1, JENNY LIND ISLAND, NUNAVUT

EAST LANDING LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Metre	1 : 500	NOVEMBER 2011
DRAWN BY: P. LÉGARÉ	VERIFIED BY: J. MARTEL-GAGNON	APPROVED BY: J.-P. PELLETIER
PROJECT NO: CD9229_003_160	DRAWING NO: CD9229_003_160-CAM-1.10-PL	PAGE PL

FIGURE CAM-1.10

G:\CD9229\2011\CAM-1\PRE\OCTOBRE 2011\CD9229_003_110-CAM-1.10-PL.dwg, PL, 2011-11-10 12:55:23 PM

12.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the East Landing Landfill has been completed as per the ToR and is included as Table XXXVI hereafter. The Photographic Record contains only an index and “thumbnail” photographs. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XXXV: LANDFILL VISUAL INSPECTION PHOTO LOG
Site Name: CAM-1, Jenny Lind Island
Landfill: East Landing Landfill
Date Inspected: August 13, 2011
Inspected by: Andrew Passalis P. Eng.

Photo	Thumbnail	Filename	Date	Vantage Point		Caption
				Easting	Northing	
1		C111_4001	8/13/2011	388143	7618255	Panoramic view looking east to south from northwest of East Landing Landfill
2		C111_4002	8/13/2011	388148	7618241	View looking east along north toe of East Landing Landfill
3		C111_4003	8/13/2011	388148	7618240	View looking south along west toe of East Landing Landfill
4		C111_4004	8/13/2011	388156	7618233	View looking east along north crest of East Landing Landfill
5		C111_4005	8/13/2011	388155	7618233	View looking south along west crest of East Landing Landfill
6		C111_4006	8/13/2011	388151	7618218	View looking east along south crest of East Landing Landfill
7		C111_4007	8/13/2011	388151	7618219	View looking north along west crest of East Landing Landfill
8		C111_4008	8/13/2011	388141	7618211	View looking east-southeast along side slope of East Landing Landfill
9		C111_4009	8/13/2011	388127	7618205	View looking northeast from southwest of East Landing Landfill
10		C111_4010	8/13/2011	388154	7618198	View looking southeast along toe of East Landing Landfill
11		C111_4011	8/13/2011	388157	7618202	View looking northeast at rip rap erosion protection on south slope of East Landing Landfill
12		C111_4014	8/13/2011	388205	7618197	View northwest along south toee of East Landing Landfill
13		C111_4015	8/13/2011	388205	7618197	View north along east toe of East Landing Landfill
14		C111_4016	8/13/2011	388215	7618202	View looking west-northwest at east end of East Landing Landfill
15		C111_4017	8/13/2011	388211	7618226	View west along north toe of East Landing Landfill

16		C111_4018	8/13/2011	388203	7618221	Panoramic view looking south to northwest from northeast corner of East Landing Landfill
17		C111_4019	8/13/2011	388154	7618227	View looking east-southeast along centerline of East Landing Landfill

13 QUALITY ASSURANCE / QUALITY CONTROL

The Quality Assurance/Quality Control (QA/QC) program was implemented to monitor the quality of the analytical results. The main objective of this QA/QC program is to ensure that sampling data and analysis results are complete, precise, exact, representative and comparable. The review consisted in evaluating the sample collection/handling methodology, general laboratory comments, field (blind) duplicate samples, and inter-laboratory duplicate samples. Samples collected during the monitoring program were submitted to laboratories accredited by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

All samples were collected following strict Biogenie sampling procedures. Samples were uniquely labelled and control was maintained through the use of chain of custody forms. All samples were collected in laboratory supplied containers and preserved in insulated coolers. Appropriate QA/QC procedures were adhered to at all times.

Blind duplicate samples were submitted to Maxxam for intra-laboratory analysis, while additional duplicate samples were sent to Exova for interlaboratory comparison purposes. Both laboratories are situated in Edmonton, Alberta.

The relative percent difference (RPD) is used to evaluate the sample result variability. Average RPD values of less than 100% for soil samples and 30% for groundwater samples are considered an indication of acceptable duplicate sample variability. For groundwater samples, an RPD of greater than 30% may reflect difference in sample turbidity or variance in the sample procedures. Individual RPD values greater than 50% are not considered to reflect acceptable variability. RPD values are not used to evaluate those compounds which are present at concentrations less than five times the method detection limit (MDL).

13.1 SOIL SAMPLES

In the case of soil samples, one blind duplicate sample was submitted for intra- and inter-laboratory comparisons. Review of results indicated relatively minor differences in concentrations within the Maxxam and Exova metals results when duplicates were compared, and were considered to be within acceptable limits. It should be noted that many of the individual parameter concentrations were less than five times the MDL. One RPD value (91%) for chromium was however outside the acceptable range when intra-laboratory duplicates were compared. The soil chemical analysis results and the evaluation of analytical data for the 2011 QA/QC samples are presented in Tables XXXVII and XXXIII below.

All of the TPH and PCB concentrations were below the MDL in the intra- and inter laboratory samples.

Overall, the soil sample results are coherent and within the same range of results for intra- and inter-laboratory samples.

Table XXXVII: Soil Chemical Analysis Results – QA/QC Samples – Metals - EXOVA

Lab ID		821335-1	**Nominal Detection Limit**
Sample ID		C111-6WB	
Sampling Date (yyyy-mm-dd)		2011-08-20	
Parameters	**Unit**		
Mercury	mg/kg	<0.01	0.01
Antimony	mg/kg	<0.2	0.2
Arsenic - Total	mg/kg	2.2	0.2
Barium	mg/kg	16	1
Beryllium	mg/kg	0.2	0.1
Cadmium	mg/kg	0.02	0.01
Chromium	mg/kg	5.8	0.1
Cobalt	mg/kg	2.1	0.1
Copper	mg/kg	3	1
Lead	mg/kg	4.5	0.1
Molybdenum	mg/kg	<1	1
Nickel	mg/kg	4.6	0.5
Selenium - Total	mg/kg	0.3	0.3
Silver	mg/kg	0.2	0.1
Thallium - Total	mg/kg	0.06	0.05
Tin	mg/kg	<1	1
Uranium - Total	mg/kg	<0.5	0.5
Vanadium	mg/kg	10.7	0.1
Zinc	mg/kg	6	1

S/P/CD/CAM-1/2011/T/11-C1-METSOIL.xls

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Table XXXVIII: Soil Chemical Analysis Results – QA/QC Samples – PHCs, BTEX & PCBs - EXOVA

Lab ID	**Sample Name**	**Sampling Date** yyyy-mm-dd	**Parameters**								
			Benzene mg/kg	**Toluene** mg/kg	**Ethylbenzene** mg/kg	**Xylenes** mg/kg	**Total PCBs** mg/kg	**PHC (F1)** mg/kg	**PHC (F2)** mg/kg	**PHC (F3)** mg/kg	**PHC (F4)** mg/kg
821335-1	C111-6WB	2011-08-20	<0.004	<0.005	<0.010	<0.010	<1	<4	<10	<30	<20
Nominal Detection Limit			**0.004**	**0.005**	**0.010**	**0.010**	**0.1**	**4**	**10**	**30**	**20**

PHC (F1): Petroleum hydrocarbon C_6 to C_{10}, does not include BTEX fractions
PHC (F2): Petroleum hydrocarbon $C_{>10}$ to C_{16}
PHC (F3): Petroleum hydrocarbon $C_{>16}$ to C_{34}
PHC (F4): Petroleum hydrocarbon $C_{>34}$ to C_{50+}

S/P/CD/9229/CAM-1/2011/T/11-C1-BTEX-PHC-soil.xls

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APPENDIX A

Range of the Report and Limitation of Responsibilities

RANGE OF THE REPORT AND LIMITATION OF RESPONSIBILITIES

A – Recipient and Use

This report ("Report") was prepared by Biogenie, a division of EnGlobe Corp., ("Biogenie") at the request and for the sole benefit of the Client ("Client"), and is intended to be used exclusively by the Client.

B –Site Conditions

Any description of the target site ("Site"), soil and/or groundwater included in the Report is only provided as an indication to the Client, and unless otherwise specifically mentioned in the Report such description shall not at any time and under any circumstances be used for purposes other than to gain a better understanding of the Site and to fulfil the requirements of the mandate assigned to Biogenie by the Client ("Mandate").

All information, including but not limiting the comprehensiveness of the data, charts, descriptions, drawings, tables, analysis results, compilations, and any conclusion and recommendation included in the Report, shall arise from the direct observation of the Site during a specific period, namely the fulfilment of the Mandate, and from the interpretation of such information and data available during the same period.

The content of the Report shall not apply in any way or to any part of the Site or to any parameter, material or analysis excluded from the Mandate.

Biogenie shall not be held responsible for the presence of any substance or material of a different nature, or of a similar nature but with different concentrations, as those indicated in the Report, and this in any part or parts of the Site excluded from the Mandate.

The content of the Report, including its conclusions and recommendations, shall not apply to any period preceding or following the Mandate. The physiochemical conditions of the Site, and the type and degree of contamination identified on the Site, may vary within a given period depending on a number of factors, especially the current activities taking place on the Site and/or on lands adjacent to the Site.

A review of the Report and/or changes in the parameters, conclusions and/or recommendations may prove to be necessary in the event of a change in the Site conditions or the discovery of pertinent information subsequent to the production of the Report.

C - Legislation, Regulations, Guidelines and Policies

The interpretation of the data and observations concerning the Site, as well as the conclusions and recommendations resulting from these, shall take into account the laws, regulations, standards, policies and/or guidelines applicable to the Project and that are in effect at the time of the fulfilment of the Mandate. In the event no current law, regulation, policy, guideline or standard applies to the project, Biogenie shall take into account proven environmental and professional rules and practices when drawing up the Report.

Any change in the legislation, regulations, standards, policies and/or guidelines applicable to the project may result in the need to review the Report and/or modify its parameters, conclusions and/or recommendations.

D – Use of Report

The Report is intended for the exclusive use of the Client and shall only be used for the purpose it was meant for.

The content of the Report and its conclusions and recommendations only apply to the Site and may not, at any time and under any circumstances, apply to any land adjacent to the Site or to any other land located in the vicinity of the Site.

Any reproduction in any form whatsoever and any distribution or use of the Report, in whole or in part, by a person other that the Client, is strictly forbidden without the prior written consent of Biogenie. Biogenie makes no declaration and pledges no responsibility towards any person other than the Client with regard to the content of the Report and the conclusions and recommendations expressed therein.

Biogenie is in no way responsible for any loss, fine or penalty, or for any expense, damage or other prejudice of any type whatsoever, sustained by a person other than the Client as a result of the unauthorized use of the Report.

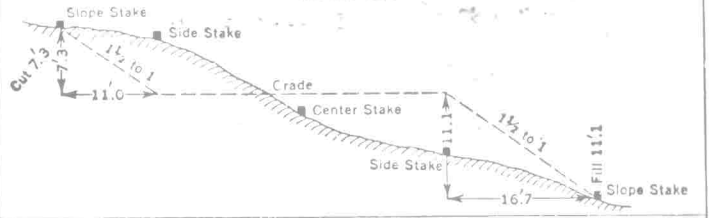
No provision of the Report shall be construed as or considered to be a legal opinion of Biogenie’s.

APPENDIX B

Field Notes

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING
Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	38.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

CAM-1 TERRY LIND ISLAND
AUGUST 13, 2011

FLIGHT 830-915

TRAVEL 830-915 TWIN-OTTER,
AERIAL PHOTOS ✓
SUNNY, 8°C 130-90 Km NW
APRON - 279.

EAST LANDING AREA LANDFILL

280 PAN S-E FROM NW CRNR
281 V- ESE ALONG N TOE
V- S ALONG W TOE
282 (510) V-ESE NW TOP
V-S "
283 (516) V-ESE SW TOP
V-N "
284 V- E ALONG S TOE
285 V-ENE ALONG S TOE FROM SHORELINE
286 (42) V-E ALONG S. TOE - COBBLES.
NO WP. (43) COBBLE ON S FACE V-NE
287 V-WNW FROM SE TOE (PAST)
288 PAN NE-W from SE of LF. (PAST)
289 V-W @ SE TOP TOE. (44) S-SLOPE
V-NNE " " EAST SLOPE

LEVEL

290 V- NW & E. SLOPE (44)
291 V- ENE & N. SLOPE & NE TOE
292 PAN, NW-S ACROSS LF FROM NE TOP (BW 512/513)

- NO PONDING, VEG, EROSION, DEBRIS. SETTLEMENT.
293 V. ESE ALONG ℄.

USAF LANDFILL

LOBE 1:
294 PAN SE-N ACROSS LOBES 1 & 2 (Backgnd) FROM W of LOBE 1
295 (618) V-E, N TOE
296 (615) V- NE, W TOE
297 CONCRETE MARKER POST
298 (612/13) V-NNW, SW
299 PAN N-W ACROSS LF.
300 CONR MARKER POST
301 (611) V-WNW, SE ALONG TOE
363 PAN SW-E ACROSS (610)
NO VEG, , SETTLEMENT, DEBRIS NOTED ON LOBE 1.

- POSSIBLE MINOR EROSION ON LOBE 1 FINES (WASHING) NO CHANELING NOTED IN 2010 REPORT

LOBE 2 (NORTH)
- POORLY GRADED MAT'L ACROSS TOP SURFACE (LITTLE TO NO SANDS), NO VEG, EROSION, SETTLEMENT, DEBRIS
304 (605) PAN E-NW ACROSS FROM SW CORNER
V-NE ALONG TOE
305 (604) V- N, SW ALONG TOE.
306 (602) V- W, S " "
(602) PAN. W-S. ACROSS TOP
307 (601) V- E, S FROM NW CORNER
308 PAN. SW-SE FROM N of LOBE 2

309 PLAQUE

TIER II

310 VIEW NW FROM S OF MON.
311 PAN N-W ACROSS E SLOPE
312 - MW-05

MW-05 WP 312
SLUP 0.45-0.14 = 0.31 m
▽ 1.575 TOTAL, NO WATER
F/P = ϕ. dry.
SOIL SAMPLES 2.9m N OF MW

C111-5WA 0-10 3 JARS + BAG
B 40-50 3 JARS + BAG

· BROWN SAND WITH GRAVEL, FINE GR
TR SILT

MW-06 WP 313. 3.1m NNW
SLUP = 0.64-.11 = 0.53m
▽ dry
bott. 1.565 F/P = ϕ

C111-6WA 0-10
B 40-50 BD1

0- BROWN/GREY SAND, F-MED GR,
TRACE SILT, SOME GRAVEL, DRY
0.2 - MED-CS SAND

MW-7 WP 314.
3.0 m NW
SLUP = 0.58-0.07 = 051
▽ - dry
bottom 1.465 F/P = ϕ

0-10 BROWN/GREY) F-MED SAND
TR SILT + GRAVEL, DRY
10-50 BROWN, WITH GRAVEL

7WA 0-10
B 40-50

MW-8 WP 315.
SLUP = 0.55 -0.07 = 0.48m
▽ dry
bottom 1.585 m F/P = ϕ

2.7m W

320 (812) NW CORNER TOP, PAN NW-SE ACROSS
- V-S @ MW-5
V-NW @ MW-6
V NW @ VT-3

321 (811) PAN SW-SE ACROSS TOP.

322 MINOR EROSION 7m L from top
5-15 cm W, 1-3 cm deep
working finer, V NW/SE

323 MINOR EROSION, 10 m L from top
5-10 cm W, 1-3 cm ↓, V-NW/SE

324 V-SE @ VT-2 + VT-4 (BACK)

325 MINOR EROSION, 8 m L from top
5-10 cm W, 1-2 cm ↓ V-NW/SE

326 (810) PAN S-E-N. ACROSS TOP
V-SE @ VT-1., V-W down CRNR

327 (813) PAN NE-W. ACROSS TOP
V-S down CRNR

328 MINOR SETTLEMENT 20x20cm x3cm
V-E/N

329 SE. TOE V-NE/NW

330 V-NE @ S SLOPE

331 SW TOE, V-SE/NE

332 V-SE @ WEST SLOPE

333 V-SE @ W. SLOPE

334 V-SW/SE FROM NW TOE

335 V-SW @ N SLOPE

336 NE TOE, V-NW/SW

SOUTHEAST LF - LOBE 2

337 (280) PAN. SW-E. ACROSS
V-SSW/SE ALONG TOE.

338 MINOR SETTLEMENT ON N SLOPE
0.4 x 2 x 5 cm V/S
V-NW/NE.

339 (281) V-NW/S ALONG TOE

340 (282) toe V-W/WSW

341 PAN N-SW ACROSS TOP

LOBE 1

342 (270) PAN SW-E
V-SW/E ALONG TOE

343 (275) VEHICLE RUT 15 cm W,
TOP TOE, 3-5 cm ↓ V-W/E

344 (TOE) V-NE/S ALONG TOE

345 (274) PAN E-NW

346 TOE V-N/NE ALONG TOE.

347 (272) PAN N-SW-ACROSS TOP
348 TOE V-SW ALONG TOE.
349 (271) V-SW ALONG TOE

NO VEG, EROS, SETTLEMENT, STAINS, DEBRIS

WEST LANDFILL

350 (202) PAN N-SW ACROSS TOP
351 MINOR EROSION, BLDR VISIBLE
V-N. ON SLOPE, 2mL, 10cmW
3 cm ↓.
354 3 small settlement // to slope
NW of erosion, V-SE.
40x20x5 cm ↓
15x70x5 +
40x20x5 ↓
353 small s. hole 20x20x10↓
V-NW.
355 linear depression 80x20x5-10↓
V-E.
357 Center of 3 small depr. near top slope
30x20x5-10↓ V-N

NO CRACKING NOTED @ 201 AS IN 2010
358 V-SE/W ALONG TOE
PAN W-SE ACROSS TOP
359 (207) V-SSW ALONG TOE.
360 SETT. BELOW CREST, V-SW
50x30x10↓
V-SW @ RUTS
361 LINEAR STAIN (IRON) SURFACE
4m x 30 cm W. V-NE
362 UNEVEN SURFACE ON CRNR (@206)
5m x 5m AREA, UP TO 15cm ↓
363 PAN SW-N.
TOE V-SE/NE ALONG TOE.
364 START // cracks, V-E/W, EXTENDING
7m L, 3-5mm W. // MIDSLOPE.
30-50 cm APART
365 (204) PAN NE-W ACROSS TOP
END
367 START OF SINGLE CRACK 2-4 cm W.
V-E 4m L. MIDSLOPE UP TO TOP
366 V-N @ S SLOPE

NON-HAZARDOUS WASTE LANDFILL

368 (710) WEST TOP CRNR
PAN SE-NE, V- SE/NE
369 VIEW NE ALONG TOE (NO WP)
↘ MW-04
370 MW-03
371 N TOE V- SW/SE ALONG TOE
372 (711) PAN SW-SE ACROSS TOP
V- SW/SE
373 EXP TEXTILE, V-S WOVEN 3 PIECES
374 (712) PAN NNW-SE
375 V- NW/SE ALONG TOE
376 EXP DEBRIS. V- W.
30x10 WOVEN/NON WOVEN
377 MW-2
378 MW-1
PAN NE-NW (713)
379 EXP. WOVEN TEXTILE, V-SE
10x15 cm.

NORTHEAST LANDFILL (LOBES 1+3)

380 (141) V- NW/NE
381 (140) V- SE/SW, V-S @ UNEVEN CORNER SLOPE LSSL UNEVEN SLOPE?
PAN SW-SE ACROSS TOP
382 (147) PAN S-NE
V- S/NE @ TOE
383 TOE BELOW (146) V- NE/NW.

380 UNEVEN INSIDE CORNER, POSS. SETTLEMENT, V- N/W- 1x2x20cm↓
384 (144) V- SW/NW
385 PAN SW-SE
POORLY GRADED MATL ON TOP/S. SLOPE BTW 147/148.

LOBE 2.
386 N END, V- SW @
V- SW ALONG W/E SIDE SLOPE
387 V- NE/SW @
388 V- NE @ @ S END,
V- NE @ W/E SIDE SLOPES

BORROW AREA NORTH (LOBES 4+5)

389 (135) PAN W-N
390 V- NE ALONG W TOE
391 (133) PAN NNE-SW.
392 V- W ALONG TOE - WASHING OF FINES FROM SIDESLOPE, NO CHANNELS
393 V- SW @ LOBES 4/5
V- N @ LOBE 3
394 MIN STAINING ON SIDE SLOPE
V SE 8m x 2-3m W.
395 V - SW AT S. SLOPE (NW side)

LOBE 3

396 PAN NE-NW
397 (124) PAN N-SW.
398 START OF SL. STAINED / PARTIALLY PONDED AREA ON E SIDE
399 N- END OF PONDING 70m x 10m
V- S + CLOSE UP @ TOE -, OUTSIDE LF
400 (123) V - N/S
401 START OF PONDED AREA V-NE
402 (121) PAN SW-SE ACROSS TOP
403 (120 TOE) V- SE ALONG TOE/SW.
V N ALONG E SIDE OF LOBES H2
404 (111) PAN N-S

405 V-SW.
406 V- NE.

LOBE 3

407 (127) V+S / NE
408 SETTLEMENT. 4m x 0.7 x 10↓
V-S
409 V- N ALONG W TOE
410. V- NE.

MAIN LANDFILL

411 (344) N- NE/SE
V- NW ACCESS RD.
412 V- SW ALONG TOE, EVID. OF FORMER PONDING, MINOR WASHING OF FINES. NO SIG EROSION
413. (343) V- NE/S, PAN S-NE
414 MINOR EROSION 6m L, .80 - 1m W
upto 15↓ V- NE
415 (341) PAN SE-N FINES ALONG
V- ENE / NNE TOES.
416 EVID. OF MIN EROS @ TOE FROM FORMER PONDING + WASHING OF FINES
NO CHANNELING ON LF -
417 (339) V- W/S

418 (338) PAN E-NW.
419 (337) V- NE/W
420 (336) V- SW/SE
421 V- NW.
422 (333) V- NE
432 (332) PAN NW/SW-
432 PAN NE-NW @ EAST LF.
424 V- NW/SE
START OF FORMER PONDING @ TOE.
425 MIN EROSION ON NE S. SLOPE
TOP - TOE 6m, 10.W, 2-5↓.
V- NE/SE NEAR (330)
426 (330) V-SE @ EROS.

EAST LANDFILL.

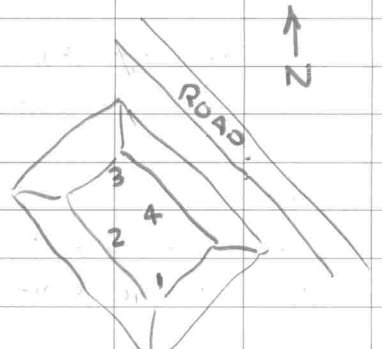
427 (319) V. NNE @ FORMER PONDED AREA
V-SE @ TOE.; NO EROS ON LF.
428 (321) V-NE/S, PAN S-NE
429 (322) V- WSW/ESE
431 (311) V. SSE/NW
430 AREA OF ISOL. SETTLEMENT / LINEAR
3 AREAS V-WNW
5-7 cm↓ 10-15W. 2-4mL.
432 ISOL SETTLEMENT 40x50x7 cm↓
V- E

433 (313) V-NW (S ALONG TOE
434 (314) V-SW
435 PAN NE-NW.
436 (316) PAN. NE-W.
V- NE/WSW. TOE.
437 (317) V- NNE
438 (318) V- NW/SW.

AUG 14, 2011

TIER II DATALOGGERS. REINSTALL DATALOGGERS

VT-1	07060015
VT-2	07050030
VT-3	07050003
VT-4	07060006



8°C, OVERCAST,
AUGUST 14, 2011 25-30 km/h NW
CRAIG / ROB - ADLAIR
BRANDON, KALEEN, JOE, SUSIE

8⁰⁰ - 9⁰⁰ LOAD. PLANE
9 - 10 - FLY TO CAM-1
REINSTALL DATALOGGERS
TO ORIGINAL LOCATIONS, STICKERS
ON BOXES DO NOT MATCH LOC
IE Red #1 @ VT-3

10³⁰ - 12⁰⁰ FLY TO COM-3
LUNCH. CHECK IN W/ LINDSAY.

BEACH LANDFILL. 8°C, 25 km/h NW
LT. RAIN

439 PAN NW-SW FROM E OF LF.
440 V- NW ALONG NE TOE
V- N ALONG DRAINAGE CH TO
NE OF LF
441 PAN NW-SW from E - TOP
442 MINOR DEPRESSION FEAT. B SAME.
V- SE
443 PAN SW-SE, MINOR RUNOFF.
CH. ALONG N-SIDE 10-30 cm ↓
FINES WASHING ONLY, NO SIG EROS.

APPENDIX C

Maxxam and Exova QA/QC Reports and Certificates of Analysis

Your Project #: DLCU LANDFILL MONITORING
Site Location: CAM-1 JENNY LIND

Attention: JEAN-PIERRE PELLETIER
SILA REMEDIATION
4495 BL. WILFRED-HAMEL BUR 100
QUEBEC, PQ
CANADA GIP 2T7

Report Date: 2011/08/22

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B175689
Received: 2011/08/15, 8:50

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	9	2011/08/17	2011/08/19	CAL SOP-00190	CCME CWS, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	9	2011/08/17	2011/08/20	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	9	2011/08/19	2011/08/20	AB SOP-00043	EPA 200.8
Moisture	9	N/A	2011/08/17	CAL SOP-00023	McKeague MSSMA 2.411
Polychlorinated Biphenyls	1	2011/08/17	2011/08/18	CAL SOP-00149	EPA 3550B, EPA 8082A
Polychlorinated Biphenyls	8	2011/08/17	2011/08/19	CAL SOP-00149	EPA 3550B, EPA 8082A

* Results relate only to the items tested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ioana Stoica, Project Manager
Email: IStoica@maxxam.ca
Phone# (403) 291-3077

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B175689
Report Date: 2011/08/22

SILA REMEDIATION
Client Project #: DLCU LANDFILL MONITORING
Site Location: CAM-1 JENNY LIND
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BG8319	BG8338	BG8339	BG8340	BG8341	BG8342	BG8343	BG8347	BG8348		
Sampling Date		2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13		
	Units	**C111-5WA**	**C111-5WB**	**C111-6WA**	**C111-6WB**	**C111-7WA**	**C111-7WB**	**C111-8WA**	**C111-8WB**	**C111-BD1**	**RDL**	**QC Batch**
Physical Properties												
Moisture	%	9.1	3.8	7.1	3.3	5.7	3.5	4.7	3.7	3.2	0.3	5101100
Ext. Pet. Hydrocarbon												
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	5106431
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	5106431
Reached Baseline at C50	mg/kg	YES	YES	YES	YES	YES	YES	YES	YES	YES		5106431
Surrogate Recovery (%)												
O-TERPHENYL (sur.)	%	77	78	76	75	76	72	77	77	76		5106431
Volatiles												
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	<12	<12	<12	<12	12	5101093
(C6-C10)	mg/kg	<12	<12	<12	<12	<12	<12	<12	<12	<12	12	5101093
Surrogate Recovery (%)												
1,4-Difluorobenzene (sur.)	%	100	102	100	107	106	103	108	107	101		5101093
4-BROMOFLUOROBENZENE (sur.)	%	82	84	80	88	87	87	86	84	90		5101093
D10-ETHYLBENZENE (sur.)	%	99	107	108	118	118	124	127	110	106		5101093
D4-1,2-DICHLOROETHANE (sur.)	%	87	90	87	94	94	96	99	96	88		5101093

RDL = Reportable Detection Limit

Maxxam Job #: B175689
Report Date: 2011/08/22

SILA REMEDIATION
Client Project #: DLCU LANDFILL MONITORING
Site Location: CAM-1 JENNY LIND
Sampler Initials: AP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		BG8319	BG8338	BG8339	BG8340	BG8341	BG8342	BG8343	BG8347	BG8348		
Sampling Date		2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13		
	Units	**C111-5WA**	**C111-5WB**	**C111-6WA**	**C111-6WB**	**C111-7WA**	**C111-7WB**	**C111-8WA**	**C111-8WB**	**C111-BD1**	**RDL**	**QC Batch**
Polychlorinated Biphenyls												
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1254	mg/kg	0.070	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Total Aroclors	mg/kg	0.070	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5103217
Surrogate Recovery (%)												
NONACHLOROBIPHENYL (sur.)	%	94	103	89	98	96	94	97	95	102		5103217

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		BG8319	BG8338	BG8339	BG8340	BG8341	BG8342	BG8343	BG8347	BG8348		
Sampling Date		2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13	2011/08/13		
	Units	**C111-5WA**	**C111-5WB**	**C111-6WA**	**C111-6WB**	**C111-7WA**	**C111-7WB**	**C111-8WA**	**C111-8WB**	**C111-BD1**	**RDL**	**QC Batch**
Elements												
Total Arsenic (As)	mg/kg	3	2	3	2	1	2	1	2	2	1	5109037
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	5109037
Total Chromium (Cr)	mg/kg	3	4	3	6	3	4	3	6	16	1	5109037
Total Cobalt (Co)	mg/kg	1	1	1	2	<1	1	1	2	1	1	5109037
Total Copper (Cu)	mg/kg	<5	5	<5	<5	<5	<5	<5	<5	<5	5	5109037
Total Lead (Pb)	mg/kg	10	5	6	4	3	3	3	5	4	1	5109037
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	5109037
Total Nickel (Ni)	mg/kg	2	3	2	3	2	3	2	3	8	1	5109037
Total Zinc (Zn)	mg/kg	49	21	<10	<10	<10	<10	<10	<10	<10	10	5109037

RDL = Reportable Detection Limit

Maxxam Job #: B175689
Report Date: 2011/08/22

SILA REMEDIATION
Client Project #: DLCU LANDFILL MONITORING
Site Location: CAM-1 JENNY LIND
Sampler Initials: AP

Package 1	3.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

Maxxam Job #: B175689
Report Date: 2011/08/22

SILA REMEDIATION
Client Project #: DLCU LANDFILL MONITORING
Site Location: CAM-1 JENNY LIND
Sampler Initials: AP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
5101093	1,4-Difluorobenzene (sur.)	2011/08/18	94	60 - 140	95	60 - 140	108	%				
5101093	4-BROMOFLUOROBENZENE (sur.)	2011/08/18	95	60 - 140	89	60 - 140	89	%				
5101093	D10-ETHYLBENZENE (sur.)	2011/08/18	120	60 - 130	108	60 - 130	114	%				
5101093	D4-1,2-DICHLOROETHANE (sur.)	2011/08/18	88	60 - 140	75	60 - 140	91	%				
5101093	(C6-C10)	2011/08/19	111	60 - 140	89	60 - 140	<12	mg/kg	NC	50		
5101093	F1 (C6-C10) - BTEX	2011/08/19					<12	mg/kg	NC	50		
5101100	Moisture	2011/08/17							14.5	20		
5103217	NONACHLOROBIPHENYL (sur.)	2011/08/18	111	30 - 130	94	30 - 130	105	%				
5103217	Aroclor 1260	2011/08/19	113	30 - 130	111	30 - 130	<0.010	mg/kg	NC	50		
5103217	Aroclor 1016	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1221	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1232	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1242	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1248	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1254	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1262	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Aroclor 1268	2011/08/19					<0.010	mg/kg	NC	50		
5103217	Total Aroclors	2011/08/19					<0.010	mg/kg	NC	50		
5106431	O-TERPHENYL (sur.)	2011/08/20	72	50 - 130	80	50 - 130	83	%				
5106431	F2 (C10-C16 Hydrocarbons)	2011/08/20	98	50 - 130	107	70 - 130	<10	mg/kg	NC	50		
5106431	F3 (C16-C34 Hydrocarbons)	2011/08/20	87	50 - 130	98	70 - 130	<10	mg/kg	NC	50		
5109037	Total Arsenic (As)	2011/08/20	93	75 - 125	89	80 - 107	<1	mg/kg	NC	35	109	50 - 150
5109037	Total Cadmium (Cd)	2011/08/20	98	75 - 125	93	75 - 125	<0.1	mg/kg	NC	35		
5109037	Total Chromium (Cr)	2011/08/20	98	75 - 125	93	75 - 125	<1	mg/kg	1.4	35	98	41 - 159
5109037	Total Cobalt (Co)	2011/08/20	98	75 - 125	95	75 - 125	<1	mg/kg	NC	35	112	75 - 125
5109037	Total Copper (Cu)	2011/08/20	NC	75 - 125	93	75 - 125	<5	mg/kg	1.1	35	96	72 - 127
5109037	Total Lead (Pb)	2011/08/20	NC	75 - 125	96	82 - 118	<1	mg/kg	17.3	35	99	54 - 146
5109037	Total Mercury (Hg)	2011/08/20	91	75 - 125	90	75 - 125	<0.05	mg/kg	NC	35		
5109037	Total Nickel (Ni)	2011/08/20	93	75 - 125	94	75 - 125	<1	mg/kg	3.9	35	109	61 - 139
5109037	Total Zinc (Zn)	2011/08/20	NC	75 - 125	93	75 - 125	<10	mg/kg	0.3	35	99	72 - 128

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B175689

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Janet Gao, Senior Analyst, Organics Department

LUBA SHYMUSHOVSKA, Senior Analyst, Organic Department

LILI ZHOU, Senior analyst, Inorganic department.

==========

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Maxxam Analytics

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Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 465-1212, Fax: (780) 450-4187, Toll free: (877) 465-8889

Chain of Custody

Page: 1 of 1

Invoice To: Require Report? Yes [X] No [ ]

Company Name: SILA REMEDIATIONS (Client# 4781)
Contact Name: J.P. PELLETIER
Address: 4495 WILFRID NAMEL, SUITE 200
Prov: QUEBEC, QUEBEC PC: G1P 2J7
Contact #s: Ph: (418) 569-9677 Fax: (418) 653-3583

Report To: SAME
Prov: PC:
Ph: Fax:

PO# / AFE#:
Quotation #: A90192
Project #: DLCU LANDFILL MONITORING PROJECT
Proj. Name:
Location: CAM-1 JENNY LND
Sampler's Initials: A.P.

DETECTION LIMIT REQUIREMENTS:

Check the applicable criterion and indicate land use

- [ ] AT1
- [ ] CCME
- [X] OTHER

REPORT DISTRIBUTION:

EMAIL ADDRESS(S):
jppelletier@bibersie-env.com
apassalis@emts.net

SERVICE REQUESTED:

- [ ] RUSH (Please ensure you contact the lab to reserve)
  Date Required:
- [X] REGULAR Turnaround (5 to 7 Days)

	Sample Identification	Matrix S/W	Date & Time Sampled Year/Month/Day	SOILS: BTEX/F1-F4	SOILS: F1 to F3	SOILS: Sieve (75 micron)	SOILS: Salinity 4	SOILS: Regulated Metals (CCME / AT1)1	SOILS: Assessment ICP Metals2	SOILS: Paint Filter ☐ Flashpoint ☐ pH (1:1)	SOILS: TCLP ☐ BTEX ☐ Metals	SOILS: PCBs	SOILS: Cu, Ni, Co, Cr, Cd, Pb, Zn, Hg, As	WATERS: TPHR	WATERS: ☐ Ammonia ☐ TKN ☐ COD	WATERS: ☐ TOC ☐ DOC	WATERS: REGULATED METALS (CCME / AT1)3 Total ☐ Preserved ☐ Not Preserved	WATERS: Dissolved ☐ Preserved ☐ Not Preserved ☐ Filtered ☐ Not Filtered	WATERS: Mercury ☐ Total ☐ Dissolved	WATERS: PCB	OTHER TEST(S)	*HOLD for 60 Days	# of Containers Submitted
1	C111-5WA	S	13/8/11	X								X	X									4
2	C111-5WB			X								X	X									4
3	C111-6WA			X								X	X									4
4	C111-6WB			X								X	X									4
5	C111-7WA			X								X	X									4
6	C111-7WB			X								X	X									4
7	C111-8WA			X								X	X									4
8	C111-8WB			X								X	X									4
9	C111-BD1			X								X	X									3
10																						
11																						
12																						

B+50 SHG

ARRIVED AT DEPOT:
AUG 15 2011
TEMP: 4/3/3

* All samples are held for 60 calendar days after sample receipt. For long term storage please contact your project manager.

Maxxam Job #: B175689

Relinquished By: A. PASSALIS Date/Time: 14/8/11
Sign and Print:
COMMENTS/SPECIAL INSTRUCTIONS:

RECEIVED
AUG 16 2011
10:17
CUSTODY SEAL YES / NO

# JARS USED & NOT SUBMITTED	Received By	Temperature	Ice

CONFIRMATION-RECEIPT OF SAMPLES FOR ANALYSIS

Maxxam Job # B175689

Client Project #: DLCU LANDFILL MONITORING 9 Samples
Site Location: CAM-1 JENNY LIND

Samples Received 2011/08/15
Client Confirmation 2011/08/16
Expected Report Delivery 2011/08/22 18:00

Report will be sent to:
JEAN-PIERRE PELLETIER
SILA REMEDIATION
QUEBEC
GIP 2T7
Ph 204-791-4938
Fax 418-781-0186
jppelletier@biogenie-env.com

Invoice will be sent to:
JEAN-PIERRE PELLETIER
SILA REMEDIATION
QUEBEC
GIP 2T7
Ph 4186534422-5431
Fax 418-653-3583
jppelletier@biogenie-env.com

Copy of Report will be sent to:
ANDREW PASSALIS

We have received the following samples:

C111-5WA Sampled 2011/08/13 Matrix: SOIL
Maxxam #: BG8319
**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sample Shipping & Handling
Sub Sample for Dry Grind
Sub-sample for metals

C111-5WB Sampled 2011/08/13
Maxxam #: BG8338
**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

C111-6WA Sampled 2011/08/13
Maxxam #: BG8339
**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils

Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

C111-6WB Sampled 2011/08/13

Maxxam #: BG8340

**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

C111-7WA Sampled 2011/08/13

Maxxam #: BG8341

**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

C111-7WB Sampled 2011/08/13

Maxxam #: BG8342

**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

C111-8WA Sampled 2011/08/13

Maxxam #: BG8343

**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls

Sub Sample for Dry Grind
Sub-sample for metals

C111-8WB Sampled 2011/08/13

Maxxam #: BG8347

**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

C111-BD1 Sampled 2011/08/13

Maxxam #: BG8348

**AT1 BTEX and F1-F4 in Soil
Acid Digestion for Metals - Soils
Drying and Grinding
*Elements by ICPMS - Soils
Environmental Sample Disposal Fee
PCB Extraction
Polychlorinated Biphenyls
Sub Sample for Dry Grind
Sub-sample for metals

Comments:

- Unless special storage arrangements are made, all samples will be discarded 60 days after receipt of samples.
- Non-regular samples are flagged as (C) Composite by lab, (H) Hold, or (L) Leachate.
- If there are any problems with the submitted samples, a Sample Integrity Form (SIF) detailing conditions will be included in this confirmation.
- For revisions please contact your Maxxam Project Management team at Ph (403) 291-3077 or Fax (403) 291-9468. Your Project Manager is: Ioana Stoica

Maxxam Analytics

Calgary: 4000 19st St. NE, T2E 6P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247

Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 465-1212, Fax: (780) 450-4187, Toll free: (877) 465-8889

Chain of Custody

Page: 1 of 1

Invoice To:	Require Report? Yes [X] No [ ]
Company Name:	SILA REMEDIATIONS (Client# 4781)
Contact Name:	J.P. PELLETIER
Address:	4495 WILFRID HAMEL, SUITE 200
Prov:	QUEBEC, QUEBEC PC: G1P 2J7
Contact #s:	Ph: (418) 569-9677 Fax: (418) 653-3583

Report To:	SAME
Prov:	PC:
Ph:	Fax:

PO# / AFE#:	
Quotation #:	A90192
Project #:	DLCU LANDFILL MONITORING PROJECT
Proj. Name:	
Location:	CAM-1 JENNY LIND
Sampler's Initials:	A.P.

DETECTION LIMIT REQUIREMENTS:

Check the applicable criterion and indicate land use

- [ ] AT1 _____
- [ ] CCME _____
- [X] OTHER _____

REPORT DISTRIBUTION:

EMAIL ADDRESS(S):

jppelletier@sebiosie-env.com

apassalis@sentsnet

SERVICE REQUESTED:

- [ ] RUSH (Please ensure you contact the lab to reserve)

  Date Required: _____
- [X] REGULAR Turnaround (5 to 7 Days)

	Sample Identification	Matrix S/W	Date & Time Sampled Year/Month/Day	SOILS: ~~BTEX~~ F1 to F3	Sieve (75 micron)	Salinity 4	Regulated Metals (CCME / AT1)1	Assessment: ICP Metals2	Paint Filter / Flashpoint / pH (1:1)	TCLP / BTEX / Metals	PCBs	Cu, Ni, Co, Cr, Cd, Pb, Zn, Hg, As	WATERS: TPHR	Ammonia / TKN / COD	TOC / DOC	Total / Preserved / Not Preserved	Dissolved / Preserved / Not Preserved / Filtered / Not Filtered	Mercury / Total / Dissolved	PCB	OTHER TEST(S)	*HOLD for 60 Days	# of Containers Submitted
1	C111-5WA	S	13/8/11	X							X	X										4
2	C111-5WB			X							X	X										4
3	C111-6WA			X							X	X										4
4	C111-6WB			X							X	X										4
5	C111-7WA			X							X	X										4
6	C111-7WB			X							X	X										4
7	C111-8WA			X							X	X										4
8	C111-8WB			X							X	X										4
9	C111-BD1			X							X	X										3
10																						
11																						
12																						

8.50 mg

ARRIVED AT DEPOT:

AUG 15 2011

TEMP: 4/3/31

RECEIVED

AUG 16 2011

10:17

Maxxam Job #: B175689

* *All samples are held for 60 calendar days after sample receipt. For long term storage please contact your project manager.*

Relinquished By: A. PASSALIS Date/Time: 14/8/11

Sign and Print:

COMMENTS/SPECIAL INSTRUCTIONS:

# JARS USED & NOT SUBMITTED	Received By:	Temperature	Ice
	CUSTODY SEAL YES / NO		

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F: +1 (780) 438-0396
E: Edmonton@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**821335**
Report To:	EGE	ID:		Control Number:	89706
	511 Pepperloaf Cres.	Name:	CAM-1 Landfill Monitoring	Date Received:	Aug 19, 2011
	Winnipeg, MB, Canada	Location:		Date Reported:	Aug 29, 2011
	R3R 1E6	LSD:		Report Number:	1462590
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:					

Contact & Affiliation	Address	Delivery Commitments
Accounts Payable Sila Remediation Inc.	200,4495 Boul. Wilfrid-Hamel Quebec City, Quebec G1P 2J7 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: n/a	On [Lot Approval and Final Test Report Approval] send (Invoice) by Post M
JP Pelletiere Sila Remediation Inc.	200,4495 Boul. Wilfrid-Hamel Quebec City, Quebec G1P 2J7 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: jppelletier@biogenie-env.com	On [Lot Verification] send (COA, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Merge Reports
A Passalis EGE	511 Pepperloaf Cres. Winnipeg, Manitoba R3R 1E6 Phone: (204) 837-6473 Fax: (204) 837-6473 Email: apassalis@mts.net	On [Lot Verification] send (COA, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Merge Reports

Notes To Clients:

Exova
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Edmonton, Alberta
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E: Edmonton@exova.com
W: www.exova.com

Sample Custody

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM-1 Landfill Monitoring
	Winnipeg, MB, Canada	Location:	
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:			

Lot ID:	**821335**
Control Number:	89706
Date Received:	Aug 19, 2011
Date Reported:	Aug 29, 2011
Report Number:	1462590

Sample Disposal Date: September 28, 2011

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the top of this page.

☐ Extend Sample Storage Until _____ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for an additional 30 days	$ 2.50 per sample
Storage for an additional 60 days	$ 5.00 per sample
Storage for an additional 90 days	$ 7.50 per sample

☐ Return Sample, collect, to the address below via:

- ☐ Greyhound
- ☐ DHL
- ☐ Purolator
- ☐ Other (specify) _____

Name _____
Company _____
Address _____
_____
Phone _____
Fax _____

Signature _____

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7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

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F: +1 (780) 438-0396
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**821335**
Report To:	EGE	ID:		Control Number:	89706
	511 Pepperloaf Cres.	Name:	CAM-1 Landfill Monitoring	Date Received:	Aug 19, 2011
	Winnipeg, MB, Canada	Location:		Date Reported:	Aug 29, 2011
	R3R 1E6	LSD:		Report Number:	1462590
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:					

Reference Number	821335-1
Sample Date	Aug 20, 2011
Sample Time	NA
Sample Location	
Sample Description	C111-6WB
Matrix	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.5			0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01			0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2			0.2
Arsenic	Strong Acid Extractable	mg/kg	2.2			0.2
Barium	Strong Acid Extractable	mg/kg	16			1
Beryllium	Strong Acid Extractable	mg/kg	0.2			0.1
Cadmium	Strong Acid Extractable	mg/kg	0.02			0.01
Chromium	Strong Acid Extractable	mg/kg	5.8			0.1
Cobalt	Strong Acid Extractable	mg/kg	2.1			0.1
Copper	Strong Acid Extractable	mg/kg	3			1
Lead	Strong Acid Extractable	mg/kg	4.5			0.1
Molybdenum	Strong Acid Extractable	mg/kg	<1			1
Nickel	Strong Acid Extractable	mg/kg	4.6			0.5
Selenium	Strong Acid Extractable	mg/kg	0.3			0.3
Silver	Strong Acid Extractable	mg/kg	0.2			0.1
Thallium	Strong Acid Extractable	mg/kg	0.06			0.05
Tin	Strong Acid Extractable	mg/kg	<1			1
Uranium	Strong Acid Extractable	mg/kg	<0.5			0.5
Vanadium	Strong Acid Extractable	mg/kg	10.7			0.1
Zinc	Strong Acid Extractable	mg/kg	6			1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date			20-Aug-11			
Benzene	Dry Weight	mg/kg	<0.004			0.004
Toluene	Dry Weight	mg/kg	<0.005			0.005
Ethylbenzene	Dry Weight	mg/kg	<0.010			0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.010			0.010
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date			20-Aug-11			
F1 C6-C10	Dry Weight	mg/kg	<4			4
F1 -BTEX	Dry Weight	mg/kg	<4			4
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date			20-Aug-11			
F2c C10-C16	Dry Weight	mg/kg	<10			10
F3c C16-C34	Dry Weight	mg/kg	<30			30
F4c C34-C50	Dry Weight	mg/kg	<20			20

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W: www.exova.com

Analytical Report

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**821335**
Report To:	EGE	ID:		Control Number:	89706
	511 Pepperloaf Cres.	Name:	CAM-1 Landfill Monitoring	Date Received:	Aug 19, 2011
	Winnipeg, MB, Canada	Location:		Date Reported:	Aug 29, 2011
	R3R 1E6	LSD:		Report Number:	1462590
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:					

Reference Number	821335-1
Sample Date	Aug 20, 2011
Sample Time	NA
Sample Location	
Sample Description	C111-6WB
Matrix	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<20			20
% C50+		%	<5			
Silica Gel Cleanup						
Silica Gel Cleanup			Done			
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	3.16			
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1			0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1			0.1
Total PCBs	Dry Weight	mg/kg	<0.1			0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110			50-150

Approved by:

Randy Neumann, BSc
General Manager

Exova
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Edmonton, Alberta
T6B 3J4, Canada

T: +1 (780) 438-5522
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W: www.exova.com

Methodology and Notes

Bill To:	Sila Remediation Inc.	Project:	
Report To:	EGE	ID:	
	511 Pepperloaf Cres.	Name:	CAM-1 Landfill Monitoring
	Winnipeg, MB, Canada	Location:	
	R3R 1E6	LSD:	
Attn:	A Passalis	P.O.:	
Sampled By:	A. Passalis	Acct code:	
Company:			

Lot ID:	**821335**
Control Number:	89706
Date Received:	Aug 19, 2011
Date Reported:	Aug 29, 2011
Report Number:	1462590

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	McKeague	*	Hot Water Soluble Boron - Azomethine -H Method, 4.61	25-Aug-11	Exova Edmonton
BTEX-CCME - Soil	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	20-Aug-11	Exova Calgary
BTEX-CCME - Soil	US EPA	*	US EPA method, 8260B/5035	20-Aug-11	Exova Calgary
Mercury (Hot Block) in Soil	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	25-Aug-11	Exova Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	*	Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	25-Aug-11	Exova Edmonton
PCB - Soil	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	23-Aug-11	Exova Calgary
TEH-CCME-Soil (Shake)	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	20-Aug-11	Exova Calgary

** Reference Method Modified*

References

CCME	Canadian Council of Ministers of the Environment
McKeague	Manual on Soil Sampling and Methods of Analysis
SW-846	Test Methods for Evaluating Solid Waste
US EPA	US Environmental Protection Agency Test Methods

Comments:

Exova
7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

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E: Edmonton@exova.com
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Analytical Report

Bill To:	Sila Remediation Inc.	Project:		Lot ID:	**821335**
Report To:	EGE	ID:		Control Number:	89706
	511 Pepperloaf Cres.	Name:	CAM-1 Landfill Monitoring	Date Received:	Aug 19, 2011
	Winnipeg, MB, Canada	Location:		Date Reported:	Aug 29, 2011
	R3R 1E6	LSD:		Report Number:	1462590
Attn:	A Passalis	P.O.:			
Sampled By:	A. Passalis	Acct code:			
Company:					

Petroleum Hydrocarbons in Soil

Batch Notes

1. The method used complies with the Reference Method for the Canada Wide Standards for Petroleum Hydrocarbons in Soil - Tier 1, April 2001, including Addendum 1, and is accredited for use in Exova.
2. Modifications of the method: See Notes and Methodology for nonconformances (if applicable).
3. Qualifications on results: See Notes and Methodology for nonconformances (if applicable).
4. Silica gel treatment is performed for fractions F2, F3, F4.
5. F1-BTEX: BTEX has been subtracted from the F1 fraction.
6. If analyzed, naphthalene has been subtracted from fraction F2 and selected PAHs have been subtracted from fraction F3.
7. F4HTGC is reported when more than 5% of the total carbon envelope elutes past C_{50}.
8. Exova does not routinely report Gravimetric Heavy Hydrocarbons (F4G or F4G-sg), F4HTGC through extended range high temperature GC is reported instead.
9. When both F4(C_{34}-C_{50}) and F4HTGC are reported, F4HTGC is the final F4 that is to be used for interpreting the CWS.
10. Quality criteria met for the batch: Data is reported in Quality Control Section of report (if requested).
    -nC_6 and nC_{10} response factors (RF) are within 30% of RF for toluene
    -nC_{10}, nC_{16} and nC_{34} RFs are within 10% of each other
    -nC_{50} RF is within 30% of the average RF for nC_{10}+nC_{16}+nC_{34}
    -linearity is within 15% for each of the calibrated carbon ranges
11. Batch data for analytical quality control are available on request.
12. Extraction and analysis holding times were met: See Notes and Methodology for nonconformances (if applicable).

Approved by:

Randy Neumann, BSc
General Manager