THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER FOX-3 DISTANT EARLY WARNING LINE SITE

Dewar Lakes, Nunavut

REVISED FINAL REPORT – 2014
(O/Ref.: CD2655) (Y/Ref.: DLCMON (QIKIQ12)

DEFENCE CONSTRUCTION CANADA

OCTOBER 2015

EnGlobe
4485, Wilfrid-Hamel Blvd
Quebec, Quebec G1P 2J7
CANADA

Tel.: 418 653-4422
Fax: 418 653-3583

THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER FOX-3 DISTANT EARLY WARNING LINE SITE

Dewar Lakes, Nunavut

REVISED FINAL REPORT – 2014
(O/Ref.: CD2655) (Y/Ref.: DLCMON (QIKIQ12)

DEFENCE CONSTRUCTION CANADA

OCTOBER 2015

Presented to: Nahed Farah
Defence Construction Canada

Written by:
Martin Fleury, P.Eng.
Project Manager

Verified by:
Jean-Pierre Pelletier, B. Sc., Chemist
Project Leader

Approved by:
Philippe Gélinas, P.Eng., M. Sc., M.B.A.
Team Leader

TABLE OF CONTENTS

1 OUTLINE 1
1.1 OBJECTIVE AND SCOPE OF WORK 1
1.2 FIELD PROGRAM STAFF AND TIMING 2
1.3 2014 WEATHER CONDITIONS 2
1.4 REPORT FORMAT 2

2 METHODOLOGY 5
2.1 VISUAL INSPECTION 5
2.2 SOIL SAMPLING 5
2.3 GROUNDWATER SAMPLING 7
2.4 THERMAL MONITORING 8
2.5 FIELD NOTES AND DATA 8
2.6 QUALITY CONTROL 8
2.7 QA/QC PROCEDURES 9
2.8 PROJECT REFERENCES 9

3 STATION WEST LANDFILL 10
3.1 SUMMARY 10
3.2 PRELIMINARY STABILITY ASSESSMENT 13
3.3 LOCATION PLAN 14
3.4 PHOTOGRAPHIC RECORDS 16
3.5 SOIL SAMPLE ANALYTICAL DATA 19

4 WEST LANDFILL 20
4.1 SUMMARY 20
4.2 PRELIMINARY STABILITY ASSESSMENT 23
4.3 LOCATION PLAN 24

4.4 PHOTOGRAPHIC RECORDS 26
4.5 SOIL SAMPLE ANALYTICAL DATA 28

5 NON-HAZARDOUS WASTE LANDFILL 29
5.1 SUMMARY 29
5.2 PRELIMINARY STABILITY ASSESSMENT 32
5.3 LOCATION PLAN 33
5.4 PHOTOGRAPHIC RECORDS 35
5.5 SOIL SAMPLE ANALYTICAL DATA 37
5.6 GROUNDWATER SAMPLE ANALYTICAL DATA 38
5.7 MONITORING WELL SAMPLING / INSPECTION LOGS 39

6 TIER II DISPOSAL FACILITY 44
6.1 SUMMARY 44
6.2 PRELIMINARY STABILITY ASSESSMENT 47
6.3 LOCATION PLAN 48
6.4 THERMISTOR ANNUAL MAINTENANCE REPORTS 50
6.5 PHOTOGRAPHIC RECORDS 55
6.6 SOIL SAMPLE ANALYTICAL DATA 57
6.7 GROUNDWATER SAMPLE ANALYTICAL DATA 58
6.8 MONITORING WELL SAMPLING / INSPECTION LOGS 59

LIST OF TABLES

Table I: 2014 Monitoring Requirements for FOX-3 Landfills 1

Table II: Summary of Soil Sampling at FOX-3 - August 2014 6

Table III: Summary of Groundwater Sampling at FOX-3 - August 2014 8

Table IV: Visual Inspection Checklist - Station West Landfill 11

Table V: Preliminary Stability Assessment - Station West Landfill 13

Table VI: Landfill Visual Inspection Photo Log - Station West Landfill (page 1 of 2) 17

Table VII: Station West Landfill Summary Table for Soil Analytical Data 19

Table VIII: Visual Inspection Checklist - West Landfill 21

Table IX: Preliminary Stability Assessment - West Landfill 23

Table X: Landfill Visual Inspection Photo Log - West Landfill 27

Table XI: West Landfill Summary Table for Soil Analytical Data 28

Table XII: Visual Inspection Checklist - Non-Hazardous Waste Landfill 30

Table XIII: Preliminary Stability Assessment - Non-Hazardous Waste Landfill 32

Table XIV: Landfill Visual Inspection Photo Log - Non-Hazardous Waste Landfill 36

Table XV: Non-Hazardous Waste Landfill Summary Table for Soil Analytical Data 37

Table XVI: Non-Hazardous Waste Landfill Summary Table for Groundwater Analytical Data 38

Table XVII: Visual Inspection Checklist - Tier II Disposal Facility 45

Table XVIII: Preliminary Stability Assessment - Tier II Disposal Facility 47

Table XIX: Landfill Visual Inspection Photo Log - Tier II Disposal Facility 56

Table XX: Tier II Summary Table for Soil Analytical Data 57

Table XXI: Tier II Summary Table for Groundwater Analytical Data 58

LIST OF FIGURES

Figure FOX-3.1 Dewar Lakes - Overall Site Plan 4

Figure FOX-3.2 Dewar Lakes - Station West Landfill 15

Figure FOX-3.3 Dewar Lakes - West Landfill 25

Figure FOX-3.4 Dewar Lakes - Non-Hazardous Waste Landfill 34

Figure FOX-3.5 Dewar Lakes - Tier II Disposal Facility 49

LIST OF ANNEXES

ANNEX 1 Maxxam and Exova QA/QC Reports and Certificates of Analyses

ANNEX 2 Discussion of the QA/QC

ANNEX 3 Field Notes and COC forms

ANNEX 4 Range of the Report and Limitation of Responsibilities

1 OUTLINE

1.1 OBJECTIVE AND SCOPE OF WORK

The objective of the Defence Construction Canada (DCC) Landfill Monitoring Program is to collect sufficient information to assess the performance of landfills at former Distant Early Warning (DEW) line sites that have been remediated, from a geotechnical and environmental perspective. DCC has specified the requirements for the Landfill Monitoring Program in the document entitled *"Terms of Reference (TOR) - Services for the Collection of Landfill Monitoring Data CAM-5 Mackar Inlet, FOX-M Hall Beach, FOX-2 Longstaff Bluff, FOX-3 Dewar Lakes DEW Line Sites, Nunavut Territory Qikiqtaaluk Region DCC Project #: DLCMON (QIKIQ12), March 20, 2012"*. This report contains the findings from the 2014 inspection of the FOX-3 Dewar Lakes site.

During the 2014 monitoring program, a visual inspection and soil sampling were completed at all site landfills. Groundwater sampling was performed at the Non-Hazardous Waste Landfill and the Tier II Disposal Facility, while thermal monitoring was only conducted at the Tier II Disposal Facility as it is the only landfill equipped with thermistors. Table I summarizes the monitoring requirements of the 2014 season. No deviations from the TOR were experienced while completing the 2014 monitoring.

Table I: 2014 Monitoring Requirements for FOX-3 Landfills

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Station West Landfill	✓	✓		
West Landfill	✓	✓		
Non-Hazardous Waste Landfill	✓	✓	✓	
Tier II Disposal Facility	✓	✓	✓	✓*

* Thermistor batteries replaced

1.2 FIELD PROGRAM STAFF AND TIMING

The 2014 on-site field program at FOX-3 Dewar Lakes took place from August 26 to August 29, 2014. Biogénie, a division of EnGlobe Corp. (Biogénie) subcontracted Sila Remediation Inc. (Sila), from Igloolik, Nunavut to perform the fieldwork. The Sila field program was to be executed by Mr. Martin Fleury with the assistance of four local representatives, whose names and responsibilities are detailed below:

- Mr. Martin Fleury, Project Engineer (Englobe)
- Mr. Caleb Qanatsiaq, Field Assistant (Sila)
- Mr. Philip Siakuluk, Field Assistant (Sila)
- Mr. George Inuksuk, Wildlife Monitor (Sila)
- Mr. David Qanatsiaq, Wildlife Monitor (Sila)

1.3 2014 WEATHER CONDITIONS

Weather conditions at FOX-3 Dewar Lakes were seasonably average, with temperatures ranging from 5 to 7°C, low winds and no precipitation.

1.4 REPORT FORMAT

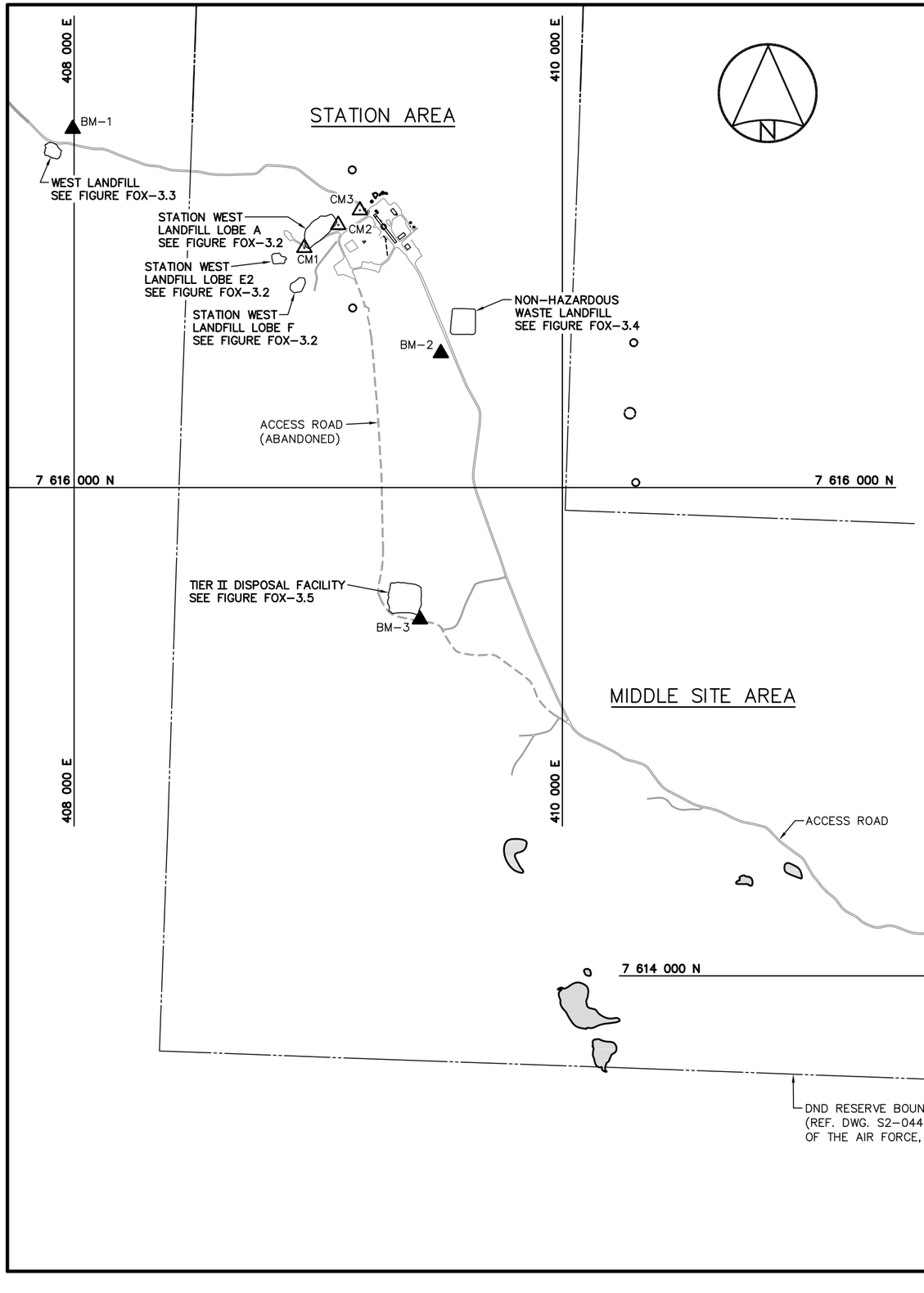
This report describes the work carried out in August 2014, at the four landfill sites at FOX-3 Dewar Lakes. Results from soil and groundwater sampling, thermal monitoring, and visual inspection of the sites are also presented in the formats described in the TOR (Reference A). An electronic version of the report and its associated tables, figures, and data files are included in a DVD-ROM attached to this report.

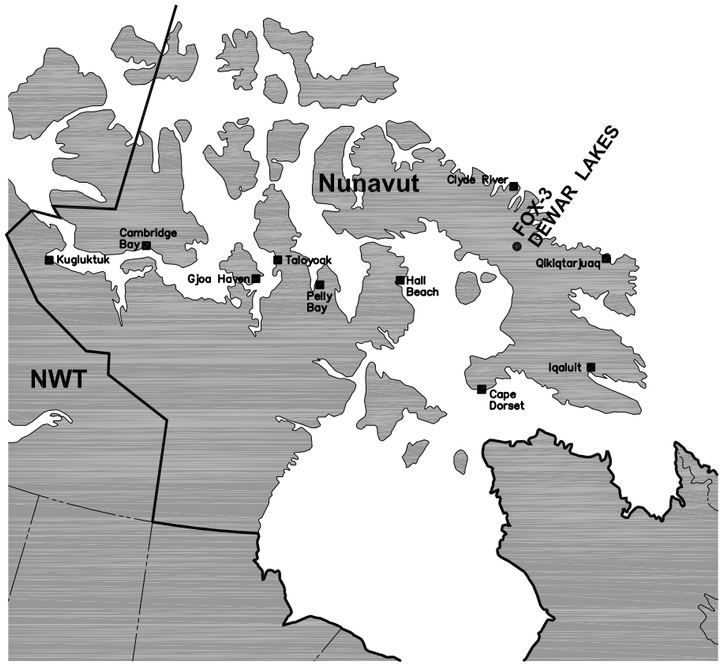
The report is organized with a separate section for each of the landfill areas. Each section contains all relevant information for that landfill area, for the 2014 Landfill Monitoring Program. The following information is provided in each landfill section:

- Visual inspection checklist;
- Visual inspection drawing mark-up;
- A selection of visual inspection photos;
- Thermal monitoring inspection reports (where applicable);

- Summary of 2014 soil analytical data (where applicable)
- Summary of 2014 groundwater analytical data (where applicable)
- Monitoring well development/sampling reports (where applicable)

For the photographic record, the printed copy of the report includes an index image of photos for each of the landfill areas. The full resolution photos are included in electronic format in the DVD-ROM attached to this report. Certificates of Analyses, Quality Assurance/Quality Control (QA/QC) analytical results and field notes are attached in the Annexes.





LOCATION OF DEWAR LAKES WITHIN NUNAVUT TERRITORY

SCALE: NTS

LEGEND

- APPROXIMATE LOCATION OF PROPERTY BOUNDARY
- SURVEY CONTROL MONUMENT
- PERMANENT BENCHMARK LOCATION
- BODY OF WATER

NO.	VERSION	DATE	BY	VERIF.	APPR.
1	FINAL	15-06-29	P.L.	B.M.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

FOX-3, DEWAR LAKES, NUNAVUT

OVERALL SITE PLAN

SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 15,000	JUNE 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	B. MACKAY	M. FLEURY P. Eng.
PROJECT NO:	DRAWING NO:	PAGE
CD2655_420_423	CD2655_420_423_101-FOX-3_A	LS

FIGURE FOX-3-1

G:\CD2655\FINAL\FOX-3\2014\CD2655_420_423_101-FOX-3_A.dwg, PL, 2015-06-29 8:50:11 AM

2 METHODOLOGY

2.1 VISUAL INSPECTION

Data and information collected during the visual inspection of the FOX-3 landfills are included in the visual inspection data sheets. These data sheets include inspection data such 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 conditions. New features are added to the checklist and are noted as new observation.

Digital photos, with a measure of scale, were taken to illustrate the current state of the landfills as well as features of interest. Annotated sketches/diagrams are included in the report for each landfill.

The photos were taken with an Apple Ipad Air. Full resolution digital jpg copies are available on the DVD-ROM appended to this report. The photo log, including the local coordinates from where the photo was taken, orientation (relative to map north), features of note, and picture numbers are included with each landfill report.

2.2 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 1993 (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. 1993 (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 (CCME catalogue -http://www.ccme.ca/pdfs/cat_eng.pdf).

Testpits were dug using a hand shovel down to refusal or permafrost. The shovel was cleaned between testpits. Soil samples were placed directly in the laboratory provided jars/bottles and were not mixed. Disposable nitrile gloves were worn and disposed after each sample collection. Jars/bottles were cleaned prior to placement into the cooler. For the 2014 monitoring event, 20 soil sampling stations were visited. A surface sample (0-15 cm in depth) and subsurface sample (40-50 cm in depth below surface) were taken at each sampling station, except few cases. When applicable, the presence of bedrock is indicated in the Soil Sampling Analytical Data Summary tables for the various landfills.

As specified in the TOR (Reference A), the following soil sampling procedures were adhered to:

- Where required, the soil samples were collected from locations between a two to four metre radius of the monitoring wells, making sure to stay away from soil disturbed during previous years sampling campaigns.
- 4 field duplicates were collected for quality assurance and quality control purposes.
- 4 duplicate samples 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 requested parameters (TPH [F1-F3], total metals and PCBs) as specified by DCC. Table II below summarizes the soil sampling at FOX-3 during the August 2014 field program:

Table II: Summary of Soil Sampling at FOX-3 - August 2014

Landfill Site	**Soil Sample Locations**			
Tier II Disposal Facility	MW-1	MW-2	MW-3	MW-4
Non-Hazardous Waste Landfill	MW-5	MW-6	MW-7	MW-8
Station West Landfill	F3-4-2014	F3-5-2014	F3-6-2014	F3-7-2014
	F3-8-2014	F3-9-2014	F3-10-2014	F3-11-2014
	F3-12-2014	-	-	-
West Landfill	F3-1-2014	F3-2-2014	F3-3-2014	-

2.3 GROUNDWATER SAMPLING

The groundwater sampling methodology conformed to guidance provided in the following CCME documents:

- CCME EPC-NCS62E Guidance Manual on *Sampling, Analysis and Data Management for Contaminated Sites* - Volume I: Main Report, Dec 1993 (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. 1993 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).

Wells were purged as specified and measurements of *in situ* temperature, conductivity, and pH were taken. Sampling took place when these parameters were stabilized. The samples were not acidified and were not filtered (as directed in the TOR).

The groundwater sampling was performed through the monitoring wells using a dedicated waterra tube and footvalve. The water table level and well bottom (refusal) were measured using an interface probe. Also, physico-chemical parameters (T (°C), pH and Conductivity) were measured, using a multi-parameters probe, at the beginning and all over the purging process. Purging of wells was performed at a pumping rate of less than 100 ml per minute, as specified by the TOR. Once the purged volume reached a minimum of one volume of well and the physico-chemical parameters stabilized, the water sampling could be performed. The groundwater samples were collected directly in the laboratory supplied bottles.

The 2014 field program included sampling eight monitoring wells at FOX-3. Water was present in all wells but in sufficient quantity to collect samples for all required analyses in MW-1 and 4. All other wells lacked the necessary volume to collect samples for TPH analyses. It should be noted that, although requested in the COC, Exova did not perform PHC Fraction F1 analysis. Concentrations measured in the QA samples sent to Maxxam are presented where applicable.

A summary of the groundwater sampling undertaken at FOX-3 is provided in Table III. In sampled wells, no signs of free-phase hydrocarbon product were detected. Monitoring Well Development and Sampling Record forms are included in appropriate sections in this report.

Table III: Summary of Groundwater Sampling at FOX-3 - August 2014

Landfill Site	Groundwater Sample Locations			
Tier II Disposal Facility	MW-1	MW-2	MW-3	MW-4
Non-Hazardous Waste Landfill	MW-5	MW-6	MW-7	MW-8

2.4 THERMAL MONITORING

The 2014 thermal monitoring program at FOX-3 consisted of the inspection of four thermistors and data loggers, the downloading of all datasets, the manual reading of thermistors and the data logger batteries replacement. Specific detailed information regarding temperature data is presented in the Tier II Disposal Facility section of this report.

2.5 FIELD NOTES AND DATA

Field notes from the 2014 Landfill Monitoring Program, including soil and water sampling, are included in Annex 3 for reference. Notes were written in field books, previously prepared logs, or entered directly into a field computer. The notes were saved 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 Garmin GPS eTrex 30 hand-held GPS, which included a combination of continuous tracks and discrete waypoints. Datasets collected from the individual vertical thermistors were downloaded directly to a field laptop computer.

2.6 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 2.2 and 2.3 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.
- Water samples were collected through the use of dedicated Waterra foot valves and tubing.

Chain-of-Custody (COC) forms were prepared prior to mobilisation to the site and completed by the Project Engineer after sample collection. The samples were refrigerated prior to off-site shipment, in chilled coolers, by First Air Cargo directly to Maxxam Analytics Inc. (Maxxam) in Ottawa, Ontario (via Iqaluit), Exova in Ottawa, Ontario (via Iqaluit) and ESG in Kingston, Ontario (via Iqaluit), where they were checked in by laboratory representatives. All analyses were completed as specified on COC forms.

2.7 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% field duplicate samples of soil and 13% field duplicate samples of water sample were sent to Exova. Results can be found in Annexe 2.
- 10% inter-laboratory duplicate soil samples and 13% field duplicate water sample were sent to Maxxam (to determine if variation in procedures may cause significant difference in analytical results).
- 10% archival samples of soil and 10% archival water samples were sent to ESG.

2.8 PROJECT REFERENCES

The following references are specifically relevant to the 2014 Landfill Monitoring activities:

A. Invitation to Tender - *Contractor Services for the Collection of Landfill Monitoring Data: CAM-5 Mackar Inlet, FOX-M Hall Beach, FOX-2 Longstaff Bluff and FOX-3 Dewar Lakes - DEW Line Sites Nunavut Territory Qikiqtaaluk Region. DCC Project #: DLCMON(QIKIQ12)*, March 20, 2012.

B. Terms of Reference - *Services for the Collection of Landfill Monitoring Data: CAM-5 Mackar Inlet, FOX-M Hall Beach, FOX-2 Longstaff Bluff and FOX-3 Dewar Lakes - DEW Line Sites Nunavut Territory Qikiqtaaluk Region. DCC Project #: DLCMON(QIKIQ12)*, March 20, 2012.

C. *Contractor Services for the Collection of Landfill Monitoring Data: CAM-5 Mackar Inlet, FOX-M Hall Beach, FOX-2 Longstaff Bluff and FOX-3 Dewar Lakes - DEW Line Sites Nunavut Territory Qikiqtaaluk Region*. Technical Proposal - May 2012.

D. *Post-Field Progress Report, QIQKITALUK DEW Line Sites 2014*, September 2014.

3 STATION WEST LANDFILL

3.1 SUMMARY

On August 27, 2014 soil sampling and a visual inspection were completed at the Station West Landfill.

TPH fractions F2 and F3 was detected in the surface sample collected at SS7 with concentrations of 160 and 1,050 mg/kg, respectively, and in the depth sample collected at the same location with concentrations of 30 and 240 mg/kg, respectively. PCBs or relatively high metal concentrations were not detected in the collected soil samples.

As of 2014, no erosion features with “significant” or “unacceptable” severity ratings were identified in the Preliminary Stability Assessment of the Station West Landfill. Seventeen of the previously identified features were not observed during the 2014 investigation. Three new areas of ponding were noted at the toe and southwest portion of Lobe A. Debris identified in the 2014 investigation includes survey piping not removed during construction; no other exposed debris is present at the lobes.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist is included in Table IV and has been completed as per the TOR.

Table IV: Visual Inspection Checklist - Station West Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report - Page 1 of 2

SITE NAME: FOX-3 Dewar Lakes
LANDFILL DESIGNATION: Station West Landfill (Regraded Landfill)
DATE OF INSPECTION: August 27, 2014
DATE OF PREVIOUS INSPECTION: August 23, 2013
INSPECTED BY: M. Fleury
REPORT PREPARED BY: M. Fleury
MONITORING EVENT NUMBER: 3
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.

Table IV : Visual Inspection Checklist - Station West Landfill (page 2 of 2)

Checklist Item	Present (Y/N)	Feature Label	Location	Length (m)	Width (m)	Depth (m)	Extend relative to Area of Landfill (%)	Description	Photographic Reference	Severity Rating	Additional comments
Settlement	N	D	Outside of landfill, NorthWest side of lobe A	N/A	N/A	N/A	N/A	Previously identified area of settlement	26	N/A	Not observed during 2014 inspection
	N	E	Center portion of lobe A landfill	N/A	N/A	N/A	N/A	Previously identified area of settlement	7, 8, 9	N/A	Not observed during 2014 inspection
	N	F	Northeast portion of lobe A landfill	N/A	N/A	N/A	N/A	Previously identified area of settlement	10	N/A	Not observed during 2014 inspection
	N	H	South portion of lobe A landfill	N/A	N/A	N/A	N/A	Previously identified area of settlement	N/A	N/A	Not observed during 2014 inspection
	N	J	West portion of lobe E2 landfill	N/A	N/A	N/A	N/A	Previously identified area of settlement	34	N/A	Not observed during 2014 inspection
	N	K	North portion of lobe F landfill	N/A	N/A	N/A	N/A	Previously identified area of settlement	N/A	N/A	Not observed during 2014 inspection
	N	L	Southwest portion of the lobe K landfill top surface	N/A	N/A	N/A	N/A	Previously identified area of settlement	47	N/A	Not observed during 2014 inspection
Erosion	N	M	South portion of lobe F landfill, slope	N/A	N/A	N/A	N/A	Previously identified area of erosion	53	N/A	Not observed during 2014 inspection
	N	O	South portion of lobe F landfill, slope	N/A	N/A	N/A	N/A	Previously identified area of erosion	55	N/A	Not observed during 2014 inspection
	N	P	South portion of lobe F landfill, slope	N/A	N/A	N/A	N/A	Previously identified area of erosion	54	N/A	Not observed during 2014 inspection
	Y	U	Center portion of lobe A landfill	30	1.5	0.05	<1%	Zone of settlements identified in 2013	7, 8, 9	Marginal	No significant change from previous inspection
Frost Action	N	O	South portion of lobe F landfill, slope	N/A	N/A	N/A	N/A	Cracking observed in 2013	N/A	N/A	Not observed during 2014 inspection
	N	Q	South portion of lobe F landfill, slope	N/A	N/A	N/A	N/A	Cracking observed in 2013	N/A	N/A	Not observed during 2014 inspection
Animal Burrows	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	N	A	Southern surface of the landfill	N/A	N/A	N/A	N/A	2 hydrocarbons staining observerved previously	10	N/A	Not observed during 2014 inspection
	Y	B	Northeast part of the landfill top surface	10	3	NA	<1%	Iron Stains identified previously	4	Marginal	No significant change from previous inspection
Vegetation Stress	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	N	N	South portion of lobe F landfill, slope	N/A	N/A	N/A	N/A	Prevously identified area of seepage	55	N/A	Not observed during 2014 inspection
	Y	T	SouthWest portion of the lobe A - New Obs.	6	2	0.01	<1%	New water accumulation on the landfill surface	31	Acceptable	New area of ponding in southwest portion of Lobe A
	Y	V	Toe of the northern slope of lobe A - New Obs.	8	5	0.05	<1%	Water accumulation at the landfill toe	6	Acceptable	New area of ponding at the toe of northern slop of Lobe A
	Y	W	Southwest portion of the loba A - New Obs.	9	2	0.05	<1%	Water accumulation on the landfill surface	22	Acceptable	New area of ponding in southwest portion of Lobe A
Debris Exposed	Y	C	Middle of the Nothwest slope of the lobe A landfill	N/A	N/A	N/A	N/A	Orange plastic pipe debris identified previously	11	Acceptable	No significant change from previous inspection
	Y	S	Southwest slope of the lobe A landfill	N/A	N/A	N/A	N/A	Orange plastic pipe debris identified previously	30		No significant change from previous inspection
	N	G	Outside of landfill, South side of lobe A	N/A	N/A	N/A	N/A	Scattered Wood Debris observed previously	N/A	N/A	Not observed during the 2014 inspection
	N	I	Northeast limit of lobe E2 landfill	N/A	N/A	N/A	N/A	geotextile debris observed previously	N/A	N/A	Not observed during the 2014 inspection
	N	R	Outside of landfill, North side of lobe F	N/A	N/A	N/A	N/A	metal debris observed previously	N/A	N/A	Not observed during 2014 inspection
Presence / Condition of Monitoring Instruments	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Features of Note	Y	A	Northeast limit of lobe A landfill	3	2	N/A	<1%	Jet A1 fuel reservoir	10	Acceptable	No significant change from previous inspection

3.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Station West Landfill has been completed as per the TOR and is included as Table V hereafter.

Table V: Preliminary Stability Assessment - Station West Landfill

Feature	Severity Rating	Extent
Settlement	Not observed	None
Erosion	Marginal	Occasional
Frost Action	Not observed	None
Staining	Marginal	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	Isolated
Debris Exposure	Acceptable	Occasional
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 or 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 its 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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

3.3 LOCATION PLAN

The annotated drawing for the Station West Landfill has been completed as per the TOR and is included on the following page as Figure FOX-3.2 Station West Landfill.

FEATURE U
DRAINAGE CHANNEL (1.4 x 30 m)

FEATURE V
PONDING WATER (5 x 8 m)

FEATURE B
STAINING

FEATURE C
ORANGE PLASTIC PIPE

FEATURE E
SETTLEMENT

FEATURE W
PONDING WATER (9 x 2 m)

FEATURE S
ORANGE PLASTIC PIPE DEBRIS

FEATURE T
PONDING WATER (6 x 2 m)

FEATURE J
SETTLEMENT

FEATURE L
SETTLEMENT

FEATURE O
CRACKING

FEATURE Q
CRACKING

F3-3-2014
F3-4-2014
F3-5-2014
F3-6-2014
F3-7-2014
F3-8-2014
F3-9-2014
F3-10-2014
F3-11-2014
F3-12-2014

CM1
CM2

FUEL TANK
BARREL STORAGE PAD (ABANDONED)
OPEN STORAGE AREA
ACCESS TRAIL
ACCESS ROAD (ABANDONED)
NWS LANDFILL (OPERATIONAL)
STATION WEST LANDFILL LOBE A
STATION WEST LANDFILL LOBE E2
STATION WEST LANDFILL LOBE F

408 850 E
409 000 E
409 150 E
7 617 000 N
7 616 850 N

LEGEND

- CM1 — SURVEY CONTROL MONUMENT
- SOIL SAMPLING LOCATION
- SETTLEMENT (NTS)
- STAINING (NTS)
- PONDING
- DEBRIS (NTS)
- DRAINAGE CHANNEL
- 1 — PHOTOGRAPH VIEWPOINT LOCATION

0m 15m 30m 45m 60m 75m

NO.	VERSION	DATE	BY	VERIF.	APPR.
1	FINAL	15-06-29	P.L.	B.M.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

FOX-3, DEWAR LAKES, 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 www.biogenie-env.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 1,500	JUNE 2015
DRAWN BY: L.L. & G.G.	VERIFIED BY: M. FLEURY Eng.	APPROVED BY: P. GELINAS P. Eng.
PROJECT NO: CD2655_420_423	DRAWING NO: CD2655_420_423_101-FOX-3_B	PAGE PL

FIGURE FOX-3-2

G:\CD2655\FINAL\FOX-3\2014\CD2655_420_423_101-FOX-3_B.dwg, PL, 2015-06-29 8:54:24 AM

3.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Station West Landfill has been completed as per the TOR and is included as Table VI hereafter. Full-sized photographs are contained in the attached DVD-ROM.

Table VI: Landfill Visual Inspection Photo Log - Station West Landfill (page 1 of 2)

Site Name: FOX-3, Dewer Lakes
Landfill: Station West Landfill
Date Inspected: August 27, 2014
Inspected by: Martin Fleury

Photo reference	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	IMG_0596	1 825	2014-08-27	19 W 409074	7617064	West view of the F3-8-2014 sampling location
2	IMG_0597	2 844	2014-08-27	19 W 409074	7617064	View of the F3-8-2014 sampling location
3	IMG_0598	2 715	2014-08-27	19 W 409074	7617064	West view of the F3-8-2014 sampling location
4	IMG_0599	2 664	2014-08-27	19 W 409051	7617101	Southeast view of a staining spot on the surface of the landfill (Feature B)
5	IMG_0600	2 302	2014-08-27	19 W 409023	7617120	Southwest view of F3-4-2014 sampling location
6	IMG_0601	2 353	2014-08-27	19 W 409031	7617117	Southeast view of a ponding water location (Feature V)
7	IMG_0602	2 916	2014-08-27	19 W 409006	7617093	South-southwest view of a drainage channel (Feature U)
8	IMG_0603	2 898	2014-08-27	20 W 409006	7617094	South-southwest view of a drainage channel (Feature U)
9	IMG_0604	2 884	2014-08-27	19 W 409018	7617067	South-southwest view of a drainage channel (Feature U)
10	IMG_0605	2 005	2014-08-27	19 W 409061	7617082	Southeast view of a Jet Fuel reservoir on the landfill surface
11	IMG_0606	2 058	2014-08-27	19 W 408973	7617077	View of an exposed plastic pipe debris (Feature C)
12	IMG_0607	2 324	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - East
13	IMG_0608	2 346	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - East-southeast
14	IMG_0609	2 397	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - Southeast
15	IMG_0610	2 199	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - South-southeast
16	IMG_0611	1 890	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - South-southwest
17	IMG_0612	1 827	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - southwest
18	IMG_0613	2 109	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - West
19	IMG_0614	2 522	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - Northwest
20	IMG_0615	2 489	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - North
21	IMG_0616	2 395	2014-08-27	19 W 408999	7617063	Panoramic view of the lobe A landfill top surface - Northeast
22	IMG_0617	2 805	2014-08-27	19 W 408986	7617033	East view of a ponding water point (Feature W)
23	IMG_0618	2 535	2014-08-27	19 W 408981	7617105	East-northeast view of the F3-5-2014 soil sampling location
24	IMG_0619	2 567	2014-08-27	19 W 408981	7617105	East-northeast view of the F3-5-2014 soil sampling location
25	IMG_0620	2 687	2014-08-27	19 W 408981	7617105	East-northeast view of the F3-5-2014 soil sampling location

Table VI: Landfill Visual Inspection Photo Log - Station West Landfill (page 2 of 2)

Photo reference	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
26	IMG_0621	2 279	2014-08-27	19 W 408954	7617068	East-northeast view of the F3-6-2014 soil sampling location
27	IMG_0622	2 937	2014-08-27	19 W 408954	7617068	View of the F3-6-2014 soil sampling location
28	IMG_0623	2 830	2014-08-27	19 W 408934	7617033	Northeast view of the F3-7-2014 soil sampling location
29	IMG_0624	2 608	2014-08-27	19 W 408934	7617033	Northeast view of the F3-7-2014 soil sampling location
30	IMG_0625	3 155	2014-08-27	19 W 408950	7617012	View of an exposed plastic pipe debris (Feature S)
31	IMG_0626	3 019	2014-08-27	19 W 408955	7617009	East view of a ponding water point (Feature T)
32	IMG_0628	2 784	2014-08-27	19 W 408801	7616936	Northeast view of the F3-9-2014 soil sampling location
33	IMG_0629	1 880	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - West-southwest
34	IMG_0630	1 812	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - West
35	IMG_0631	2 421	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - Northwest
36	IMG_0632	2 518	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - North
37	IMG_0633	2 470	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - Northeast
38	IMG_0634	2 300	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - East
39	IMG_0635	2 321	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - Southeast
40	IMG_0636	2 261	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - Southeast
41	IMG_0637	2 089	2014-08-27	19 W 408832	7616937	Panoramic view of the lobe E2 landfill top surface - SouthWest
42	IMG_0638	1 530	2014-08-27	19 W 408867	7616910	Panoramic view of the SouthEast side of lobe E2 landfill - West-northwest
43	IMG_0639	1 955	2014-08-27	19 W 408867	7616910	Panoramic view of the SouthEast side of lobe E2 landfill - North-northwest
44	IMG_0640	2 650	2014-08-27	19 W 408876	7616819	Northeast view of the F3-12-2014 soil sampling location
45	IMG_0641	2 323	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - West-southwest
46	IMG_0642	2 111	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - South-southwest
47	IMG_0643	2 258	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - South-southeast
48	IMG_0644	2 319	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - East
49	IMG_0645	2 418	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - Northeast
50	IMG_0646	2 617	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - North-northwest
51	IMG_0647	2 345	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - West-northwest
52	IMG_0648	2 106	2014-08-27	19 W 408899	7616835	Panoramic view of the Lobe F landfill top surface - West
53	IMG_0649	1 704	2014-08-27	19 W 408910	7616783	Panoramic view of the South side of Lobe F landfill - Northwest
54	IMG_0651	2 320	2014-08-27	19 W 408910	7616783	Panoramic view of the South side of Lobe F landfill - Northeast
55	IMG_0652	2 742	2014-08-27	19 W 408922	7616795	Northwest view of F3-11-2014 soil sampling location
56	IMG_0653	2 664	2014-08-27	19 W 408922	7616795	North view of F3-11-2014 soil sampling location
57	IMG_0654	1 959	2014-08-27	19 W 408943	7616890	Southwest view of F3-10-2014 soil sampling location
58	IMG_0655	1 882	2014-08-27	19 W 408943	7616890	Southwest view of F3-10-2014 soil sampling location
59	IMG_0656	2 587	2014-08-27	19 W 408943	7616890	Southwest view of F3-10-2014 soil sampling location

3.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Station West Landfill Disposal Facility samples are presented in Table VII hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report. It should be noted that sample numbers have been altered. Please refer to Annex 1 for the sample ID key.

Table VII: Station West Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth [cm]	Parameters												
			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_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]
RDL - Exova			1	1	1	0.5	1	2	1	1	0.1	0.02	10	10	20
Upgradient Soil Samples															
F3-8-A-2014	F3-8-2014	0 -10	38	34	10	<0.5	7	78	87	14	<0.1	<0.02	<10	<10	<20
F3-8-B-2014		40 - 50	42	33	10	<0.5	8	74	77	17	<0.1	<0.02	<10	<10	<20
F3-10-A-2014	F3-10-2014	0 -10	39	41	11	<0.5	8	82	97	13	<0.1	<0.02	<10	<10	<20
F3-10-B-2014		40 - 50	30	38	9	<0.5	5	67	95	12	<0.1	<0.02	<10	<10	<20
Downgradient Soil Samples															
F3-4-A-2014	F3-4-2014	0 -10	27	28	9	<0.5	6	63	74	23	<0.1	<0.02	<10	<10	<20
F3-4-B-2014		40 - 50	42	32	9	0.5	8	72	84	19	<0.1	<0.02	<10	<10	<20
F3-5-A-2014	F3-5-2014	0 -10	45	38	12	<0.5	9	97	82	14	<0.1	<0.02	<10	<10	<20
F3-5-B-2014		40 - 50	40	37	12	<0.5	7	82	83	14	<0.1	<0.02	<10	<10	<20
F3-6-A-2014	F3-6-2014	0 -10	34	34	8	<0.5	6	72	81	13	<0.1	<0.02	<10	<10	<20
F3-6-B-2014		40 - 50	Not sampled (Reached bedrock at 0.2 m depth)												
F3-7-A-2014	F3-8-2014	0 -10	40	40	9	<0.5	7	66	94	17	<0.1	<0.02	<10	160	1050
F3-7-B-2014		40 - 50	33	28	8	<0.5	5	58	63	10	<0.1	<0.02	<10	30	240
F3-9-A-2014	F3-9-2014	0 -10	48	39	11	<0.5	8	81	83	16	<0.1	<0.02	<10	<10	<20
F3-9-B-2014		40 - 50	45	41	11	<0.5	7	75	87	15	<0.1	<0.02	<10	<10	<20
F3-11-A-2014	F3-11-2014	0 -10	50	51	16	<0.5	6	80	87	21	<0.1	<0.02	<10	<10	<20
F3-11-B-2014		40 - 50	56	54	16	<0.5	7	87	85	24	<0.1	<0.02	<10	<10	<20
F3-12-A-2014	F3-12-2014	0 -10	55	39	11	<0.5	8	80	87	24	<0.1	<0.02	<10	<10	<20
F3-12-B-2014		40 - 50	50	39	11	<0.5	7	78	89	22	<0.1	<0.02	<10	<10	<20

4 WEST LANDFILL

4.1 SUMMARY

On August 27, 2014 soil sampling and a visual inspection were completed at the West Landfill.

The depth sample at SS3 was not collected due to the presence of bedrock while the surface sample at the same location was lost during transportation (broken bottle). Neither TPH nor PCBs were detected in the collected soil samples. Elevated levels of chromium were detected in the remaining samples at concentrations varying from 86 to 163 mg/kg.

As of the 2014 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Two new areas of minor settlement were observed on the landfill surface. Three of the previously identified features were not observed during the 2014 inspection. Neither an erosion feature nor exposed debris was noted.

Based on the results of the Preliminary Stability Assessment, the West Landfill has an acceptable severity rating.

The Visual Inspection Checklist has been completed as per the TOR and is included as Table VIII.

Table VIII: Visual Inspection Checklist - West Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report - Page 1 of 2

SITE NAME: FOX-3 Dewar Lakes
LANDFILL DESIGNATION: West Landfill (Regraded Landfill)
DATE OF INSPECTION: August 27, 2014
DATE OF PREVIOUS INSPECTION: August 23, 2013
INSPECTED BY: M. Fleury
REPORT PREPARED BY: M. Fleury
MONITORING EVENT: 3
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.

Table VIII: Visual Inspection Checklist -West Landfill (page 2 of 2)

Checklist Item	Present (Y/N)	Feature Label	Location	Length (m)	Width (m)	Depth (m)	Extend relative to Area of Landfill (%)	Description	Photographic Reference	Severity Rating	Additional comments
Settlement	N	A	Northeast part of the landfill top	N/A	N/A	N/A	N/A	Previously observed area of settlement	7	N/A	Not observed during 2014 inspection
	N	B	Southeast part of the landfill top	N/A	N/A	N/A	N/A	Previously observed area of settlement	8	N/A	Not observed during 2014 inspection
	Y	E	Northwest slope of the West Landfill - New Obs.	3	1.5	0.4	<1%	New settlements in the gravel surface	12	Marginal	New settlement on the northwest slope not previously noted
	Y	F	North slope of the West Landfill - New Obs.	3	2.5	0.3	<1%	New settlements in the gravel surface	15	Marginal	New settlement on the north slope not previously noted
Erosion	N	D	North limit of the landfill, border of access road	N/A	N/A	N/A	N/A	Erosion channel observed previously	12, 16	N/A	Not observed during 2014 inspection
Frost Action	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation Stress	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Debris Exposed	N	C	Northern slope of the landfill	N/A	N/A	N/A	N/A	Cable debris observed previously	N/A	N/A	Not observed during 2014 inspection
Presence / Condition of Monitoring Instruments	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Features of Note	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the West Landfill has been completed as per the TOR and is included as Table IX hereafter.

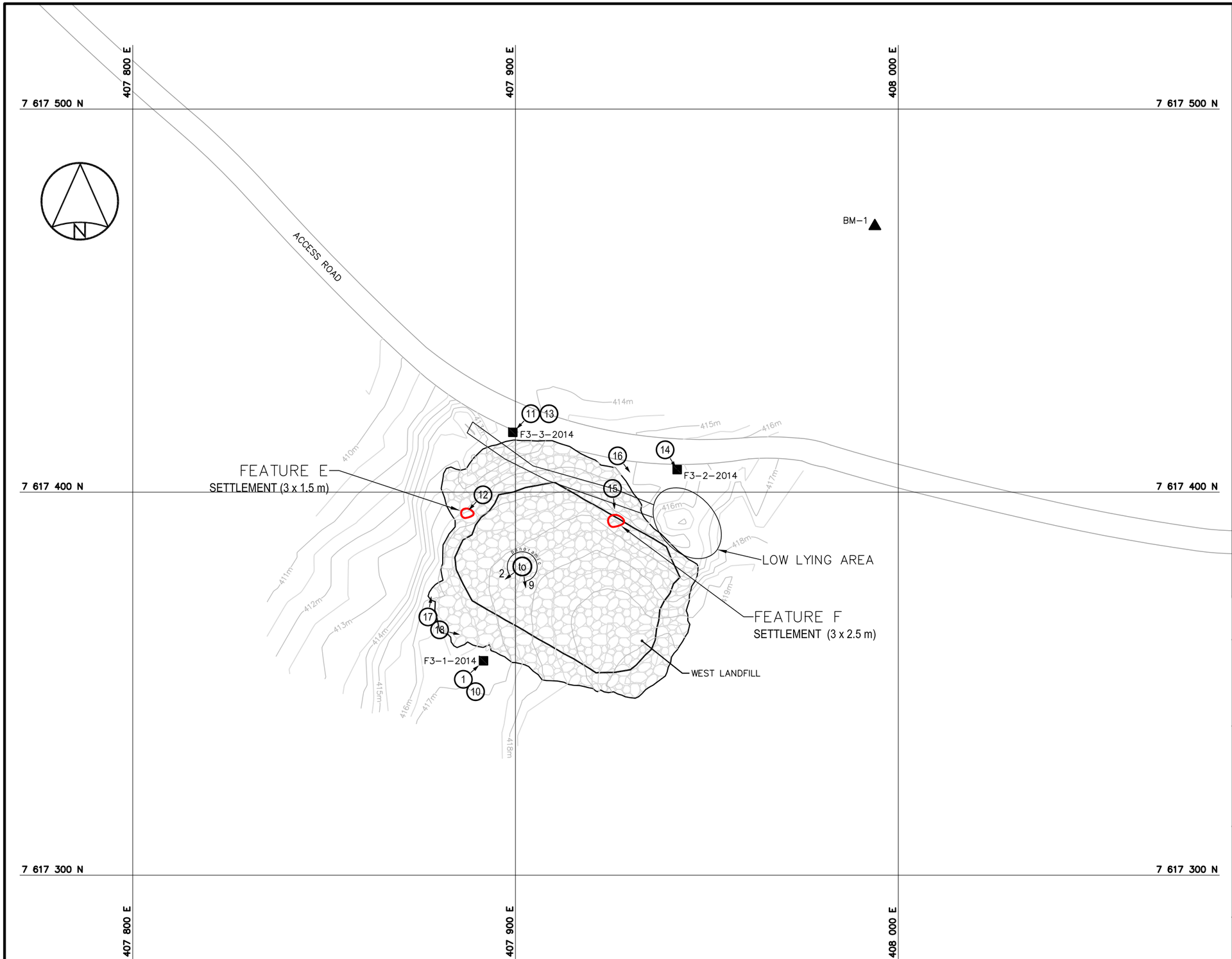
Table IX: Preliminary Stability Assessment - West Landfill

Feature	Severity Rating	Extent
Settlement	Marginal	Occasional
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 or 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 its 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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

4.3 LOCATION PLAN

The annotated drawing for the West Landfill has been completed as per the TOR and is included in the following page as Figure FOX-3.3 Dewar Lakes - West Landfill.



LEGEND

- PERMANENT BENCHMARK LOCATION
- SOIL SAMPLING LOCATION
- SETTLEMENT
- PHOTOGRAPH VIEWPOINT LOCATION

0m 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
1	FINAL	15–06–29	P.L.	B.M.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

FOX-3, DEWAR LAKES, NUNAVUT

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 www.biogenie-env.com

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,000	JUNE 2015
DRAWN BY: L.L. & G.G.	VERIFIED BY: M. FLEURY Eng.	APPROVED BY: P. GELINAS P. Eng.
PROJECT NO: CD2655_420_423	DRAWING NO: CD2655_420_423_101-FOX-3_C	PAGE PL

FIGURE FOX-3-3

G:\CD2655\FINAL\FOX-3\2014\CD2655_420_423_101-FOX-3_C.dwg, PL, 2015-07-02 2:19:30 PM

4.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the West Landfill has been completed as per the TOR and is included in the following page as Table X. Full-sized photographs are contained in the attached DVD-ROM.

Table X: Landfill Visual Inspection Photo Log - West Landfill

Site Name: FOX-3, Dewer Lakes
Landfill: West Landfill
Date Inspected: August 27, 2014
Inspected by: Martin Fleury

Photo reference	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	IMG_0657	2 389	2014-08-27	19 W 407892	7617356	Northeast view of F3-1-2014 soil sampling location
2	IMG_0658	1 962	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - Southwest
3	IMG_0659	1 639	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - West
4	IMG_0660	1 299	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - Northwest
5	IMG_0661	1 653	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - North
6	IMG_0662	2 071	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - Northeast
7	IMG_0663	2 063	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - East
8	IMG_0664	2 254	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - East-southeast
9	IMG_0665	2 220	2014-08-27	19 W 407902	7617381	Panoramic view of the West Landfill top - South-southeast
10	IMG_0666	2 299	2014-08-27	19 W 407892	7617356	Northeast view of F3-1-2014 soil sampling location
11	IMG_0667	2 508	2014-08-27	19 W 407899	7617416	Southwest view of F3-3-2014 soil sampling location
12	IMG_0668	2 509	2014-08-27	19 W 407887	7617395	Southwest view of settlements point (Feature E)
13	IMG_0669	2 810	2014-08-27	19 W 407899	7617416	Southwest view of F3-3-2014 soil sampling location
14	IMG_0670	2 135	2014-08-27	19 W 407942	7617406	Southeast view of F3-2-2014 soil sampling location
15	IMG_0671	2 145	2014-08-27	19 W 407926	7617393	North view of settlements point (Feature F)
16	IMG_0672	1 867	2014-08-27	19 W 407927	7617410	Southeast view of the nortern side of the West Landfill
17	IMG_0673	1 888	2014-08-27	19 W 407878	7617367	North-northeast view of the Western side of the West Landfill
18	IMG_0674	2 089	2014-08-27	19 W 407878	7617367	South view of the soutern side of the West Landfill

4.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 West Landfill Disposal Facility samples are presented in Table XI hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report. It should be noted that sample numbers have been altered. Please refer to Annex 1 for the sample ID key.

Table XI: West Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth [cm]	Parameters												
			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_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]
RDL - Exova			1	1	1	0.5	1	2	1	1	0.1	0.02	10	10	20
Upgradient Soil Samples															
F3-1-A-2014	F3-1-2014	0 -10	30	39	8	<0.5	9	52	86	10	<0.1	<0.02	<10	<10	<20
F3-1-B-2014		40 - 50	24	69	8	<0.5	5	57	163	6	<0.1	<0.02	<10	<10	<20
Downgradient Soil Samples															
F3-2-A-2014	F3-2-2014	0 -10	26	43	8	<0.5	6	56	109	9	<0.1	<0.02	<10	<10	<20
F3-2-B-2014		40 - 50	Not sampled (Reached bedrock at 0.18 m depth)												
F3-3-A-2014	F3-3-2014	0 -10	Lost in transport												
F3-3-B-2014		40 - 50	Not sampled (Reached bedrock at 0.22 m depth)												

5 NON-HAZARDOUS WASTE LANDFILL

5.1 SUMMARY

On August 27, 2014 soil sampling, groundwater sampling, and a visual inspection were completed at the Non-Hazardous Waste Landfill.

TPH, PCBs or relatively high metal concentrations were not detected in the collected soil samples. All monitoring wells contained sufficient water to collect metal and PCB samples; TPH samples were not collected at any of the wells due to lack of water. PCBs were not detected in any of the groundwater samples. Elevated level of zinc was detected at MW5 (5.28 mg/L).

As of the 2014 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Three areas of seepage were the only features observed during the 2014 investigation. These areas are located along the northern and western toes, as well as the northwest surface of the landfill; the seepage has been deemed acceptable. Neither settlement nor exposed debris was noted.

Based on the results of the Preliminary Stability Assessment, the Non-Hazardous Waste Landfill has an acceptable severity rating.

The Visual Inspection Checklist has been completed as per the TOR and is included as Table XII.

Table XII: Visual Inspection Checklist - Non-Hazardous Waste Landfill

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report - Page 1 of 2

SITE NAME: FOX-3 Dewar Lakes
LANDFILL DESIGNATION: Non-Hazardous Waste Landfill (Non-Hazardous Landfill)
DATE OF INSPECTION: August 27, 2014
DATE OF PREVIOUS INSPECTION: August 23, 2013
INSPECTED BY: M. Fleury
REPORT PREPARED BY: M. Fleury
MONITORING EVENT: 3
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.

Table XII: Visual Inspection Checklist -Non-Hazardous Waste Landfill (page 2 of 2)

Checklist Item	Present (Y/N)	Feature Label	Location	Length (m)	Width (m)	Depth (m)	Extend relative to Area of Landfill (%)	Description	Photographic Reference	Severity Rating	Additional comments
Settlement	N	A	Eastern surface of the landfill	N/A	N/A	N/A	N/A	Settlement identified in previous inspection	N/A	N/A	Not observed during 2014 inspection
	N	B	Top of the east landfill slope	N/A	N/A	N/A	N/A	Settlement identified in previous inspection	N/A	N/A	Not observed during 2014 inspection
Erosion	N	C	North slope of landfill	N/A	N/A	N/A	N/A	Erosion channel identified in previous inspection	N/A	N/A	Not observed during 2014 inspection
Frost Action	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation	N	E	Southern portion of landfill cap	N/A	N/A	N/A	N/A	Vegetation identified in previous inspection	N/A	N/A	Not observed during 2014 inspection
Staining	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation Stress	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	Y	G	Northeast part of the landfill top - New Obs.	4	1.5	0.02	<1%	Water accumulation on the surface of the landfill	36	Acceptable	Ponding at northeast portion not previously noticed
	Y	F	Toe of the northern slope of landfill - New Obs.	115	5	0.15	5%	Water accumulation at landfill toe	10, 12, 14	Acceptable	Ponding at toe of northern slope not previously noticed
	Y	H	Toe of the western slope of landfill - New Obs.	75	4	0.01	3%	Water accumulation at landfill toe	37, 38, 41	Acceptable	Ponding at toe of western slope not previously noticed
Debris Exposed	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Presence / Condition of Monitoring Instruments	Y	MW-05	~20 m North side of the LF	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	9	N/A	Good condition
		MW-06	~20 m West side of the LF	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	18	N/A	casing lifted by frost action
		MW-07	~25 m East side of the LF	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	1	N/A	casing lifted by frost action
		MW-08	~20 m South side of the LF	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	21	N/A	casing lifted by frost action
Other Features of Note	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

5.2 PRELIMINARY STABILITY ASSESSMENT

The Preliminary Stability Assessment for the Non-Hazardous Waste Landfill has been completed as per the TOR and is included as Table XIII hereafter.

Table XIII: Preliminary Stability Assessment - Non-Hazardous Waste 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	Acceptable	Occasional
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 or 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 its 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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

5.3 LOCATION PLAN

The annotated drawing for the Non-Hazardous Waste Landfill has been completed as per the TOR and is included on the following page as Figure FOX-3.4 Dewar Lakes - Non-Hazardous Waste Landfill.

409 500 E

409 600 E

409 700 E

POWER CABLE

POWER CABLES (4)

9 17 MW–05 MW–5–S 10 to 15 panoramic

FEATURE F
PONDED WATER

POL LINE

FEATURE G
PONDED WATER (3 x 10 m)

36

ACCESS ROAD

7 616 700 N

37 to 41 panoramic

18 MW–06 20 MW–6–S

4 2 3 8 to 7 panoramic MW–7–S MW–07 1

35 27 to 34 panoramic

NON–HAZARDOUS
WASTE LANDFILL

FEATURE H
PONDED WATER

22 panoramic 23 to 26 MW–8–S MW–08 21

7 616 600 N

BM–2

510m 509m 508m 507m 506m 505m 504m 503m 502m 501m 500m

N

0m 10m 20m 30m 40m 50m

LEGEND

- MONITORING WELL LOCATION
- PERMANENT BENCHMARK LOCATION
- SOIL SAMPLING LOCATION
- PONDING
- 1 PHOTOGRAPH VIEWPOINT LOCATION

NO.	VERSION	DATE	BY	VERIF.	APPR.
1	FINAL	15–06–29	P.L.	B.M.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

FOX-3, DEWAR LAKES, NUNAVUT

NON-HAZARDOUS WASTE 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 www.biogenie-env.com

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,000	JUNE 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L.L. & G.G.	M. FLEURY Eng.	P. GELINAS P. Eng.
PROJECT NO:	DRAWING NO:	PAGE
CD2655_420_423	CD2655_420_423_101-FOX-3_D	PL

FIGURE FOX-3-4

G:\CD2655\FINAL\FOX-3\2014\CD2655_420_423_101-FOX-3_D.dwg, PL, 2015-06-29 8:57:20 AM

5.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the Non-Hazardous Waste Landfill has been completed as per the TOR and is included in the following pages as Table XIV. Full-sized photographs are contained in the attached DVD-ROM.

Table XIV: Landfill Visual Inspection Photo Log - Non-Hazardous Waste Landfill

Site Name: FOX-3, Dewer Lakes
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 27, 2014
Inspected by: Martin Fleury

Photo reference	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	IMG_0554	2 625	2014-08-27	19 W 409667	7616678	West view of MW-7 casing
2	IMG_0555	2 305	2014-08-27	19 W 409668	7616681	East view of F3-MW-7-S soil sampling location
3	IMG_0556	2 779	2014-08-27	19 W 409668	7616681	East view of F3-MW-7-S soil sampling location
4	IMG_0557	1 772	2014-08-27	19 W 409667	7616678	Panoramic view of the Eastern side side of the landfill - South-southwest
5	IMG_0558	1 973	2014-08-27	19 W 409667	7616678	Panoramic view of the Eastern side side of the landfill - West-southwest
6	IMG_0560	2 253	2014-08-27	19 W 409667	7616678	Panoramic view of the Eastern side side of the landfill - West-northwest
7	IMG_0561	2 286	2014-08-27	19 W 409667	7616678	Panoramic view of the Eastern side side of the landfill - northwest
8	IMG_0562	2 615	2014-08-27	19 W 409668	7616681	East view of F3-MW-7-S soil sampling location
9	IMG_0563	2 540	2014-08-27	19 W 409591	7616755	Southeast view of the MW-5 casing
10	IMG_0564	2 066	2014-08-27	19 W 409590	7616751	Panoramic view of the Northern side of the landfill - East-southeast
11	IMG_0565	2 016	2014-08-27	19 W 409590	7616751	Panoramic view of the Northern side of the landfill - Southeast
12	IMG_0566	1 756	2014-08-27	19 W 409590	7616751	Panoramic view of the Northern side of the landfill - South
13	IMG_0567	1 563	2014-08-27	19 W 409590	7616751	Panoramic view of the Northern side of the landfill - Southwest
14	IMG_0568	1 556	2014-08-27	19 W 409590	7616751	Panoramic view of the Northern side of the landfill - West-southwest
15	IMG_0569	1 749	2014-08-27	19 W 409590	7616751	Panoramic view of the Northern side of the landfill - West
16	IMG_0570	3 035	2014-08-27	19 W 409594	7616753	View of the F3-MW-5-S soil sampling location
17	IMG_0571	3 041	2014-08-27	19 W 409594	7616753	Southeast view of the F3-MW-5-S soil sampling location
18	IMG_0572	2 366	2014-08-27	19 W 409523	7616691	South-southeast view of the MW-6 casing
19	IMG_0573	2 095	2014-08-27	19 W 409520	7616689	View of the F3-MW-6-S soil sampling location
20	IMG_0574	2 291	2014-08-27	19 W 409520	7616689	East view of the F3-MW-6-S soil sampling location
21	IMG_0575	2 284	2014-08-27	19 W 409594	7616607	Northeast view of MW-8 casing
22	IMG_0576	2 636	2014-08-27	19 W 409593	7616607	South view of F3-MW-8-S soil sampling location
23	IMG_0577	1 758	2014-08-27	19 W 409596	7616611	Panoramic view of the Southern side of the landfill - West-northwest
24	IMG_0578	2 133	2014-08-27	19 W 409596	7616611	Panoramic view of the Southern side of the landfill - Northwest
25	IMG_0579	2 015	2014-08-27	19 W 409596	7616611	Panoramic view of the Southern side of the landfill - Northeast
26	IMG_0580	1 919	2014-08-27	19 W 409596	7616611	Panoramic view of the Southern side of the landfill - East-northeast
27	IMG_0581	2 261	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - Northwest
28	IMG_0582	2 036	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - North
29	IMG_0583	1 924	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - Northeast
30	IMG_0584	2 134	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - East
31	IMG_0585	2 215	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - Southeast
32	IMG_0586	2 188	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - Southeast
33	IMG_0587	2 057	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - Southwest
34	IMG_0588	2 052	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - West-southwest
35	IMG_0589	2 213	2014-08-27	19 W 409595	7616670	Panoramic view of the landfill top - West-northwest
36	IMG_0590	3 037	2014-08-27	19 W 409615	7616707	East view of a ponding water point (Feature G)
37	IMG_0591	2 198	2014-08-27	19 W 409538	7616698	Paroramic view of the Western side of the landfill - North-northeast
38	IMG_0592	2 073	2014-08-27	19 W 409538	7616698	Paroramic view of the Western side of the landfill - Northeast
39	IMG_0593	2 296	2014-08-27	19 W 409538	7616698	Paroramic view of the Western side of the landfill - East
40	IMG_0594	2 402	2014-08-27	19 W 409538	7616698	Paroramic view of the Western side of the landfill - Southeast
41	IMG_0595	2 298	2014-08-27	19 W 409538	7616698	Paroramic view of the Western side of the landfill - South-southeast

5.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Non-Hazardous Waste Landfill Disposal Facility samples are presented in Table XV hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XV: Non-Hazardous Waste Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth [cm]	Parameters										F1	F2	F3
			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]	C_6-C_{10} [mg/kg]	C_{10}-C_{16} [mg/kg]	C_{16}-C_{34} [mg/kg]
RDL - Exova			1	1	1	0.5	1	2	1	1	0.1	0.02	10	10	20
F3-MW-5-S-A-2014	MW5	0 -10	28	30	8	<0.5	5	62	75	10	<0.1	<0.02	<10	<10	<20
F3-MW-5-S-B-2014		40 - 50	31	38	10	<0.5	6	67	93	18	<0.1	<0.02	<10	<10	<20
F3-MW-6-S-A-2014	MW6	0 -10	40	33	10	<0.5	7	74	82	16	<0.1	<0.02	<10	<10	<20
F3-MW-6-S-B-2014		40 - 50	44	36	11	<0.5	8	76	91	18	<0.1	<0.02	<10	<10	<20
F3-MW-7-S-A-2014	MW7	0 -10	36	38	10	<0.5	6	75	98	14	<0.1	<0.02	<10	<10	<20
F3-MW-7-S-B-2014		40 - 50	38	34	10	<0.5	6	73	85	16	<0.1	<0.02	<10	<10	<20
F3-MW-8-S-A-2014	MW8	0 -10	40	38	10	<0.5	7	80	85	14	<0.1	<0.02	<10	<10	<20
F3-MW-8-S-B-2014		40 - 50	38	40	11	<0.5	7	85	96	18	<0.1	<0.02	<10	<10	<20

5.6 GROUNDWATER SAMPLE ANALYTICAL DATA

All monitoring wells contained sufficient water to collect metal and PCB samples only. Due to the presence of sediment in the water sample collected at MW5 for PCBs analysis, a digest was required and therefore the detection limit was raised. The groundwater chemical analysis results and evaluation for the analytical data for the 2014 Non-Hazardous Waste Landfill Disposal Facility samples are presented in Table XVI hereafter. Certificates of analyses and results for groundwater samples collected as part of the QA/QC program are presented in Annexes 1 and 2, at the end of this report.

Table XVI: Non-Hazardous Waste Landfill Summary Table for Groundwater Analytical Data

Sample #	Location	Parameter												
												F1	F2	F3
		Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [mg/L]	PCBs [ug/L]	C_6-C_{10} [ug/L]	C_{10}-C_{16} [ug/L]	C_{10}-C_{34} [ug/L]
RDL - Exova		0.01	0.01	0.01	0.008	0.01	0.04	0.05	0.02	0.0001	0.1	20	20	50
Upgradient Groundwater Sample														
F3-MW-5-2014	MW5	0.18	0.27	0.07	<0.008	0.09	5.28	0.23	0.04	<0.0001	<0.5*	Insufficient water to sample		
Downgradient Groundwater Samples														
F3-MW-6-2014	MW6	0.14	0.09	<0.01	<0.008	0.03	0.68	0.09	<0.02	<0.0001	<0.1	Insufficient water to sample		
F3-MW-7-2014	MW7	0.16	0.42	0.03	<0.008	0.03	1.14	0.03	0.54	<0.0001	<0.1	Insufficient water to sample		
F3-MW-8-2014	MW8	0.04	0.10	<0.01	<0.008	0.02	0.51	0.14	<0.02	<0.0001	<0.1	Insufficient water to sample		

*: RDL raised to 0.5 mg/L due to the presence of sediment and associated digestion required

5.7 MONITORING WELL SAMPLING / INSPECTION LOGS

The monitoring well sampling logs for MW-5 to MW-8 are presented in this section. MW-6, 7 and 8 have all heaved due to frost action.

It should be noted that the final parameters (T, pH and Conductivity) measured for MW-5, MW-6 and MW-8 were incorrectly presented as initial parameters in the field notes. Corrections to the field notes were made afterwards and are initialed.

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	14:50
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-5		
Sample Number:	F3-MW-5-2014		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	66		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	86	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	20		
Measured well refusal depth BGS (cm)=	130	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	110		
Static volume of water in well (mL)=	2200	not enough water for complete sampling	
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.5	very low recharge	Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	7.26		
Final Conductivity (uS/cm)=	642		
Final Temperature (degC)=	2.95		

*** data from previous reports**

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	15:15
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-6		
Sample Number:	F3-MW-6-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	78		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	107	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	29		
Measured well refusal depth BGS (cm)=	133	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	104		
Static volume of water in well (mL)=	2080	not enough water for complete sampling	
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.5	very low recharge	Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	7.46		
Final Conductivity (uS/cm)=	417		
Final Temperature (degC)=	2.90		

*** data from previous reports**

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	14:20
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-7		
Sample Number:	F3-MW-7-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	63		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	83	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	20		
Measured well refusal depth BGS (cm)=	120	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	100		
Static volume of water in well (mL)=	2000	not enough water for complete sampling	
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.0	very low recharge	Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	7.11		
Final Conductivity (uS/cm)=	403		
Final Temperature (degC)=	2.90		

*** data from previous reports**

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	15:45
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-8		
Sample Number:	F3-MW-8-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	63		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	108	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	45		
Measured well refusal depth BGS (cm)=	130	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	85		
Static volume of water in well (mL)=	1700	not enough w ater for complete sampling	
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.0	very low recharge	Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	7.59		
Final Conductivity (uS/cm)=	513		
Final Temperature (degC)=	3.30		

*** data from previous reports**

6 TIER II DISPOSAL FACILITY

6.1 SUMMARY

The 2014 monitoring of the Tier II Disposal Facility conducted on August 27, 2014 consisted of a visual inspection to identify areas of erosion conducted and as per the TOR, the collection of soil and groundwater samples, as well as thermal monitoring.

TPH was detected in the surface sample at MW-04 at a concentration of 30 mg/kg. Relatively elevated levels of chromium were detected in most samples (from 80 to 116 mg/kg). PCBs were not detected in any of the samples.

Water levels were sufficient to allow sampling for metals and PCBs analyses at all four of the Tier II Disposal Facility groundwater wells, but lacked water to collect samples for TPH analysis at MW-2 and MW-3. No PCBs or relatively high metal concentrations were detected at any of the wells. TPH fraction F3 was detected in the sample collected at MW-01 (340 ug/L).

Thermal monitoring was conducted at the Tier II Disposal Facility, all dataloggers and thermistors were observed to be functioning properly and datasets were successfully retrieved.

As of the 2014 monitoring event, no features were identified as “significant” or “unacceptable”. The Tier II Disposal Facility is showing no signs of erosion or settlement with only one minor new seepage area identified in 2014. Seven of the previously observed features were not observed during the 2014 inspection.

At this time, the overall performance of the landfill is rated as acceptable.

The Visual Inspection Checklist has been completed as per the TOR and is included as Table XVII.

Table XVII: Visual Inspection Checklist - Tier II Disposal Facility

DEW Line Cleanup: Post-construction - Landfill Monitoring
Visual Inspection Checklist

Inspection Report - Page 1 of 2

SITE NAME: FOX-3 Dewar Lakes
LANDFILL DESIGNATION: Tier II Disposal Facility (Tier II Landfill)
DATE OF INSPECTION: August 27, 2014
DATE OF PREVIOUS INSPECTION: August 24, 2013
INSPECTED BY: M. Fleury
REPORT PREPARED BY: M. Fleury
MONITORING EVENT NUMBER: 3
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.

Table XVII: Visual Inspection Checklist - Tier II Disposal Facility (page 2 of 2)

Checklist Item	Present (Y/N)	Feature Label	Location	Length (m)	Width (m)	Depth (m)	Extend relative to Area of Landfill (%)	Description	Photographic Reference	Severity Rating	Additional comments
Settlement	N	A	Northeast corner of landfill surface	N/A	N/A	N/A	N/A	Settlement identified in previous inspection	N/A	N/A	Not observed during 2014 inspection
	N	B	North surface of the landfill	N/A	N/A	N/A	N/A	Settlement identified in previous inspection	N/A	N/A	Not observed during 2014 inspection
Erosion	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Frost Action	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	N	C	Southeast landfill slope	N/A	N/A	N/A	N/A	hydrocarbons stain identified in baseline investigation	N/A	N/A	Not observed during 2014 inspection
	N	D	South surface of the landfill	N/A	N/A	N/A	N/A	hydrocarbons stain identified in baseline investigation	N/A	N/A	Not observed during 2014 inspection
	N	E	South surface of the landfill	N/A	N/A	N/A	N/A	hydrocarbons stain identified in baseline investigation	N/A	N/A	Not observed during 2014 inspection
	N	F	South surface of the landfill	N/A	N/A	N/A	N/A	hydrocarbons stain identified in baseline investigation	N/A	N/A	Not observed during 2014 inspection
	N	G	Central landfill surface	N/A	N/A	N/A	N/A	hydrocarbons stain identified in baseline investigation	N/A	N/A	Not observed during 2014 inspection
Vegetation Stress	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	Y	H	Centre / West of the landfill top - New Obs.	0.75	1	N/A	<1%	Ponding observed on the surface of the Landfill	37	Acceptable	New ponding noted in the centre of the landfill
Debris Exposed	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Presence / Condition of Monitoring Instruments	Y	F3-MW-1	Northeast corner of the landfill	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	11	N/A	Casing lifted by frost action
		F3-MW-2	Northwest corner of the landfill	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	21	N/A	Casing lifted by frost action
		F3-MW-3	Middle West side of the landfill	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	22	N/A	Casing lifted by frost action
		F3-MW-4	East side of the landfill	N/A	N/A	N/A	N/A	Groundwater Monitoring Well	9	N/A	Casing lifted by frost action
		F3-VT-1	Northwest limit of the landfill top	N/A	N/A	N/A	N/A	Thermistors - Data Logger	1, 2	N/A	Casing and data Logger in good condition
		F3-VT-2	Northwest portion of the landfill top	N/A	N/A	N/A	N/A	Thermistors - Data Logger	3, 4	N/A	Casing and data Logger in good condition
		F3-VT-3	Southeast portion of the landfill top	N/A	N/A	N/A	N/A	Thermistors - Data Logger	5, 6	N/A	Casing and data Logger in good condition
		F3-VT-4	Southeast limit of the landfill top	N/A	N/A	N/A	N/A	Thermistors - Data Logger	8	N/A	Casing and data Logger in good condition
Other Features of Note	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

6.2 PRELIMINARY STABILITY ASSESSMENT

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

Table XVIII: Preliminary Stability Assessment - Tier II Disposal Facility

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	Acceptable	Isolated
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 or 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 its 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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

6.3 LOCATION PLAN

The Location Plan for the Tier II Disposal Facility has been completed as per the TOR and is included on the following page as Figure FOX-3.5 Dewar Lakes - Tier II Disposal Facility.

409 300 E
409 400 E
409 500 E
7 615 600 N
7 615 500 N
N
418m
417m
ADDITIONAL TYPE 6 GRANULAR FILL PLACEMENT
ADDITIONAL TYPE 1 GRANULAR FILL PLACEMENT
TIER II DISPOSAL FACILITY
FEATURE H
PONDING WATER (0,75 x 1 m)
MW-02
MW-2-S
MW-01-B
MW-1-S
MW-03
MW-3-S
MW-04
MW-4-S
VT-1
VT-2
VT-3
VT-4
BM-3
panoramic 25 to 29
panoramic 30 to 36
panoramic 38 to 40
ACCESS ROAD (ABANDONED)

LEGEND

- MONITORING WELL LOCATION
- BACKGROUND MONITORING WELL LOCATION
- GROUND TEMPERATURE CABLE LOCATION
- PERMANENT BENCHMARK LOCATION
- SOIL SAMPLING LOCATION
- PONDING
- PHOTOGRAPH VIEWPOINT LOCATION

0m 10m 20m 30m 40m 50m

NO.	VERSION	DATE	BY	VERIF.	APPR.
1	FINAL	1510-01	P.L.	B.M.	M.F.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

FOX-3, DEWAR LAKES, 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 www.biogenie-env.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 1,000	JUNE 2015
DRAWN BY: L.L. & G.G.	VERIFIED BY: M. FLEURY Eng.	APPROVED BY: P. GELINAS P. Eng.
PROJECT NO: CD2655_420_423	DRAWING NO: CD2655_420_423_101-FOX-3_E	PAGE PL

FIGURE FOX-3-5

G:\CD2655\FINAL\FOX-3\2014\CD2655_420_423_101-FOX-3_E.dwg, PL, 2015-10-01 11:10:03 AM

6.4 THERMISTOR ANNUAL MAINTENANCE REPORTS

The thermistor inspection reports for VT-1 to VT-4 are presented in this section. Batteries were changed and memories downloaded and reset in all dataloggers.

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-27**
Prepared By:	**Martin Fleury**		

Thermistor Information

Site Name:	**FOX-3 Dewer Lakes**	Thermistor Location		**Tier II Disposal Facility**	
Thermistor Number:	**VT-1**	Inclination		**Vertical**	
Install Date:	**2011-09-07**	First Date Event		Last Date Event	
Coordinates and Elevation	N **7615563**	W	**409318**	Elev	**423**
Length of Cable (m)	Cable Lead Above Ground (m)	**4.4**	Nodal Points		**14**
Datalogger Serial #	**9100022**		Cable Serial Number		**111164**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date	2014-08-27			
Battery Levels	Main **11.34** V (Best)		Aux **13.5** V (Best)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11375	7.2456
2	13205	4.2302
3	14004	3.058
4	14400	2.5046
5	15564	0.9718
6	16722	-0.4305
7	17569	-1.3889
8	18411	-2.2917

Bead	ohms	Degrees C
9	19205	-3.1016
10	20060	-3.9329
11	20870	-4.6846
12	21500	-5.2471
13	22000	-5.6805
14	22530	-6.1281

Observations and Proposed Maintenance

Batteries replaced on 2014-08-27
Memory downloaded and restarted

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-27**
Prepared By:	**Martin Fleury**		

Thermistor Information

Site Name:	**FOX-3 Dewer Lakes**	Thermistor Location		**Tier II Disposal Facility**	
Thermistor Number:	**VT-2**	Inclination		**Vertical**	
Install Date:	**2011-09-07**	First Date Event		Last Date Event	
Coordinates and Elevation	N **7615561**	W	**409334**	Elev	**419**
Length of Cable (m)	Cable Lead Above Ground (m)	**5**	Nodal Points		**10**
Datalogger Serial #	**9100028**		Cable Serial Number		**111165**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date	2014-08-27			
Battery Levels	Main **11.34** V (Best)		Aux **13.5** V (Best)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11309	7.3644
2	11382	7.233
3	13272	4.1289
4	14056	2.9843
5	14750	2.0295
6	15730	0.7637
7	17084	-0.8466
8	17806	-1.6478

Bead	ohms	Degrees C
9	18860	-2.7544
10	19800	-3.6844

Observations and Proposed Maintenance

Batteries replaced on 2014-08-27
Memory downloaded and restarted

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-27**
Prepared By:	**Martin Fleury**		

Thermistor Information

Site Name:	**FOX-3 Dewer Lakes**	Thermistor Location		**Tier II Disposal Facility**	
Thermistor Number:	**VT-3**	Inclination		**Vertical**	
Install Date:	**2011-09-07**	First Date Event		Last Date Event	
Coordinates and Elevation	N **7615523**	W	**409366**	Elev	**420**
Length of Cable (m)	Cable Lead Above Ground (m)	**5**	Nodal Points		**11**
Datalogger Serial #	**9100048**		Cable Serial Number		**111163**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date	2014-08-27			
Battery Levels	Main **11.34** V (Best)		Aux **13.14** V (Best)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10544	8.8008
2	10360	9.1639
3	11793	6.511
4	14216	2.7596
5	14502	2.3648
6	15381	1.2041
7	16896	-0.6318
8	16864	-0.5949

Bead	ohms	Degrees C
9	18713	-2.6043
10	19482	-3.3754
11	20470	-4.3176

Observations and Proposed Maintenance

Batteries replaced on 2014-08-27
Memory downloaded and restarted

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-27**
Prepared By:	**Martin Fleury**		

Thermistor Information

Site Name:	**FOX-3 Dewer Lakes**	Thermistor Location		**Tier II Disposal Facility**	
Thermistor Number:	**VT-4**	Inclination		**Vertical**	
Install Date:	**2011-09-07**	First Date Event		Last Date Event	
Coordinates and Elevation	N **7615521**	W	**409382**	Elev	**418**
Length of Cable (m)	Cable Lead Above Ground (m)	**4.66**	Nodal Points		**15**
Datalogger Serial #	**9100049**		Cable Serial Number		**111167**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date	2014-08-27			
Battery Levels	Main **11.34** V (Best)		Aux **13.5** V (Best)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9818	-31.6050
2	10897	8.1239
3	13860	3.2636
4	14257	2.0000
5	14705	2.7024
6	16240	0.1395
7	17262	-1.0476
8	18187	-2.0561

Bead	ohms	Degrees C
9	18958	-2.8537
10	19981	-3.8578
11	20750	-4.5753
12	21690	-5.4131
13	22290	-5.9269
14	22820	-6.3681
15	23380	-6.8220

Observations and Proposed Maintenance

Batteries replaced on 2014-08-27
Memory downloaded and restarted

6.5 PHOTOGRAPHIC RECORDS

The Photographic Record for the Tier II Disposal Facility has been completed as per the TOR and is included in the following pages as Table XIX. Full-sized photographs are contained in the attached DVD-ROM.

Table XIX: Landfill Visual Inspection Photo Log - Tier II Disposal Facility

Site Name: FOX-3, Dewer Lakes
Landfill: Tier II Disposal Facility
Date Inspected: August 27, 2014
Inspected by: Martin Fleury

Photo reference	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	IMG_0513	2 654	2014-08-27	19 W 409318	7615563	North view of VT-1 thermistor casing. Tier II landfill
2	IMG_0514	1 729	2014-08-27	19 W 409318	7615563	View of VT-1 data logger box
3	IMG_0515	2 543	2014-08-27	19 W 409334	7615561	West view of VT-2 thermistor casing. Tier II landfill
4	IMG_0516	1 994	2014-08-27	19 W 409334	7615561	View of VT-2 data logger box
5	IMG_0517	2 135	2014-08-27	19 W 409366	7615523	Northeast view of VT-3 thermistor casing. Tier II landfill
6	IMG_0519	1 711	2014-08-27	19 W 409366	7615523	View of VT-3 data logger box
7	IMG_0520	1 281	2014-08-27	19 W 409382	7615521	North view of VT-4 thermistor casing. Tier II landfill
8	IMG_0521	1 737	2014-08-27	19 W 409382	7615521	View of VT-4 data logger box
9	IMG_0522	2 612	2014-08-27	19 W 409426	7615516	North view of MW-4 casing
10	IMG_0523	3 133	2014-08-27	19 W 409425	7615512	View of F3-MW-4-S soil sampling location
11	IMG_0524	2 858	2014-08-27	19 W 409425	7615620	South - southwest view of MW-4 casing
12	IMG_0525	2 246	2014-08-27	19 W 409428	7615619	View of F3-MW-1-S soil sampling location
13	IMG_0526	2 572	2014-08-27	19 W 409428	7615619	West view of F3-MW-1-S soil sampling location
14	IMG_0527	2 240	2014-08-27	19 W 409425	7615620	South - southwest view of the East slope of the Tier II disposal facility
15	IMG_0528	2 397	2014-08-27	19 W 409425	7615620	West - Southwest view of the North slope of the Tier II disposal facility
16	IMG_0529	2 617	2014-08-27	19 W 409305	7615601	East view of the North slope of the Tier II Disposal Facility landfill
17	IMG_0530	2 478	2014-08-27	19 W 409305	7615601	Southeast view of the North and West slopes of the Tier II Disposal Facility landfill
18	IMG_0531	2 394	2014-08-27	19 W 409305	7615601	South view of the West slope of the Tier II disposal facility
19	IMG_0532	2 776	2014-08-27	19 W 409286	7615609	West view of F3-MW-3-S soil sampling location
20	IMG_0533	2 461	2014-08-27	19 W 409286	7615609	West view of F3-MW-3-S soil sampling location
21	IMG_0534	2 222	2014-08-27	19 W 409290	7615611	North view of MW-2 casing
22	IMG_0535	2 371	2014-08-27	19 W 409278	7615541	West view of MW-3 casing
23	IMG_0536	2 516	2014-08-27	19 W 409280	7615537	South - southeast view of F3-MW-2-S soil sampling location
24	IMG_0537	3 219	2014-08-27	19 W 409280	7615537	South - southeast view of F3-MW-2-S soil sampling location
25	IMG_0538	2 134	2014-08-27	19 W 409285	7615548	Panoramic view of the West side of the Tier II Disposal Facility landfill - North
26	IMG_0539	2 237	2014-08-27	19 W 409285	7615548	Panoramic view of the West side of the Tier II Disposal Facility landfill - Northeast
27	IMG_0540	2 457	2014-08-27	19 W 409285	7615548	Panoramic view of the West side of the Tier II Disposal Facility landfill - east
28	IMG_0541	2 050	2014-08-27	19 W 409285	7615548	Panoramic view of the West side of the Tier II Disposal Facility landfill - Southeast
29	IMG_0542	1 676	2014-08-27	19 W 409285	7615548	Panoramic view of the West side of the Tier II Disposal Facility landfill - South
30	IMG_0543	2 568	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - North
31	IMG_0544	2 723	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - North-northeast
32	IMG_0545	2 702	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - East-northeast
33	IMG_0546	2 670	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - East
34	IMG_0547	2 584	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - Southeast
35	IMG_0548	2 472	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - South
36	IMG_0549	2 361	2014-08-27	19 W 409314	7615536	Panoramic view of the Tier II Disposal Facility landfill top - South-southwest
37	IMG_0550	2 305	2014-08-27	19 W 409341	7615537	Northwest view of ponding Water (Feature H)
38	IMG_0551	2 592	2014-08-27	19 W 409366	7615472	Panoramic view of th South side of the landfill - West-northwest
39	IMG_0552	2 541	2014-08-27	19 W 409366	7615472	Panoramic view of th South side of the landfill - North
40	IMG_0553	2 687	2014-08-27	19 W 409366	7615472	Panoramic view of th South side of the landfill - East-northeast

6.6 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Tier II Disposal Facility samples are presented in Table XX hereafter. Certificates of analyses and results of field duplicates collected as part of the QA/QC program are presented in Annexes 1 and 2 at the end of this report.

Table XX: Tier II Summary Table for Soil Analytical Data

Sample #	Location	Depth [cm]	Parameters												
			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_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]
RDL - Exova			1	1	1	0.5	1	2	1	1	0.1	0.02	10	10	20
Upgradient Soil Samples															
F3-MW-1-S-A-2014	MW1	0 -10	36	36	9	<0.5	7	65	87	29	<0.1	<0.02	<10	<10	<20
F3-MW-1-S-B-2014		40 - 50	44	35	9	<0.5	8	70	89	23	<0.1	<0.02	<10	<10	<20
Downgradient Soil Samples															
F3-MW-4-S-A-2014	MW4	0 -10	43	50	12	<0.5	8	70	116	37	<0.1	<0.02	<10	<10	30
F3-MW-4-S-B-2014		40 - 50	Not sampled (Reached bedrock at 0.2 m depth)												
F3-MW-2-S-A-2014	MW2	0 -10	34	35	9	<0.5	7	65	80	18	<0.1	<0.02	<10	<10	<20
F3-MW-2-S-B-2014		40 - 50	35	45	11	<0.5	7	73	104	14	<0.1	<0.02	<10	<10	<20
F3-MW-3-S-A-2014	MW3	0 -10	44	37	11	<0.5	6	70	83	15	<0.1	<0.02	<10	<10	<20
F3-MW-3-S-B-2014		40 - 50	Not sampled (Reached bedrock at 0.15 m depth)												

6.7 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results and evaluation for the analytical data for the 2014 Tier II Disposal Facility samples are presented in Table XXI hereafter. Certificates of analyses and results for groundwater samples collected as part of the QA/QC program are presented in Annexes 1 and 2, at the end of this report.

Table XXI: Tier II Summary Table for Groundwater Analytical Data

Sample #	Location	Parameter												
												F1	F2	F3
		Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [mg/L]	PCBs [ug/L]	C_6-C_{10} [ug/L]	C_{10}-C_{16} [ug/L]	C_{10}-C_{34} [ug/L]
RDL - Exova		0.01	0.01	0.01	0.008	0.01	0.04	0.05	0.02	0.0001	0.1	20	20	50
Upgradient Groundwater Sample														
F3-MW-1-2014	MW1	0.16	0.43	0.09	<0.008	0.03	0.35	0.24	0.05	<0.0001	<0.1	<20	<20	340
Downgradient Groundwater Sample														
F3-MW-4-2014	MW4	0.04	0.28	0.08	<0.008	0.01	0.15	0.11	<0.02	<0.0001	<0.1	<20	<20	<50
F3-MW-2-2014	MW2	0.19	0.14	0.02	<0.008	0.06	0.26	<0.05	<0.02	<0.0001	<0.1	Insufficient water to sample		
F3-MW-3-2014	MW3	0.04	0.3	0.02	<0.008	<0.01	2.36	0.26	<0.02	<0.0001	<0.1	Insufficient water to sample		

6.8 MONITORING WELL SAMPLING / INSPECTION LOGS

The monitoring well sampling logs for MW-1 to MW-4 are presented in this section. It should be noted that all casings have heaved due to frost action.

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	11:15
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-1		
Sample Number:	F3-MW-1-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	56		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	93	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	37		
Measured well refusal depth BGS (cm)=	130	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	93		
Static volume of water in well (mL)=	1860		
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.0		Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	6.40		
Final Conductivity (uS/cm)=	577		
Final Temperature (degC)=	2.65		

*** data from previous reports**

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	11:45
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-2		
Sample Number:	F3-MW-2-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	65		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	112	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	47		
Measured well refusal depth BGS (cm)=	153	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	106		
Static volume of water in well (mL)=	2120	not enough w ater for complete sampling	
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	Dewar Lakes		Foot Valve
Decontamination required: (Y/N)	2.5	Dedicated Waterra Tubing	
Number washes:	N		
Number rinses:	NA		
	NA		
Final pH=			
Final Conductivity (uS/cm)=	7.12		
Final Temperature (degC)=	494		
	2.94		

*** data from previous reports**

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	12:15
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-3		
Sample Number:	F3-MW-3-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	81		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	119	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	38		
Measured well refusal depth BGS (cm)=	131	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	93		
Static volume of water in well (mL)=	1860	not enough w ater for complete sampling	
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.0		Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	6.58		
Final Conductivity (uS/cm)=	487		
Final Temperature (degC)=	2.91		

*** data from previous reports**

Development of Monitoring Wells			
Site Name:	FOX-3	Dewar Lakes	
Date of Sampling Event:	2014-08-27	Time:	10:30
Names of Samplers:		Martin Fleury	
		Caleb Qanatsiaq	
		Philip Siakuluk	
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-4		
Sample Number:	F3-MW-4-2014		
Condition of Well:	Lifted by frost action		
Measured Data			
Well pipe height above ground (cm)=	75		
Diameter of well (cm)=	5		
* Depth of well installation (cm)= (from ground surface)	440		
* Length screened section (cm)=	300		
* Depth to top of screen (cm)= (from ground surface)	36		
Depth to water surface (cm)= (from top of pipe)	90	Measurement method: (meter, tape, etc.)	Interface meter
Static water level (cm)= (below ground surface)	15		
Measured well refusal depth BGS (cm)=	140	Evidence of sludge or siltation:	Freezing
Thickness of water column (cm)=	125		
Static volume of water in well (mL)=	2500		
Free product thickness (mm)=	N	Measurement method: (meter, paste, etc.)	Interface meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra tubing
Volume Purged Water (L)=	2.5		Foot Valve
Decontamination required: (Y/N)	N	Dedicated Waterra Tubing	
Number washes:	NA		
Number rinses:	NA		
Final pH=	6.6		
Final Conductivity (uS/cm)=	401		
Final Temperature (degC)=	2.89		

*** data from previous reports**

ANNEX 1 Maxxam and Exova QA/QC Reports and Certificates of Analyses

ADDENDUM TO CERTIFICATE OF ANALYSIS AND CHAIN OF COSTODY

It should be noted that the following certificate of analysis (COA) and related chain of custody (COC's) contains some sample names inversion. In consequence, the sampling station labels shown in the COA and COC's should be read as following:

Sample label shown in COA	Laboratory I.D.	Correct sample identification
F3-3-A-2014	1131133	F3-2-A-2014
F3-4-A-2014	1131134	F3-10-A-2014
F3-4-B-2014	1131135	F3-10-B-2014
F3-5-A-2014	1131136	F3-11-A-2014
F3-5-B-2014	1131137	F3-11-B-2014
F3-6-A-2014	1131138	F3-12-A-2014
F3-6-B-2014	1131139	F3-12-A-2014
F3-7-A-2014	1131140	F3-9-A-2014
F3-7-B-2014	1131141	F3-9-B-2014
F3-8-A-2014	1131142	F3-7-A-2014
F3-8-B-2014	1131143	F3-7-B-2014
F3-9-A-2014	1131144	F3-6-A-2014
F3-10-A-2014	1131145	F3-5-A-2014
F3-10-B-2014	1131146	F3-5-B-2014
F3-11-A-2014	1131147	F3-4-A-2014
F3-11-B-2014	1131148	F3-4-B-2014
F3-12-A-2014	1131149	F3-8-A-2014
F3-12-B-2014	1131150	F3-8-B-2014
F3-MW-1-S-A-2014	1131151	F3-MW-4-S-A-2014
F3-MW-4-S-A-2014	1131155	F3-MW-1-S-A-2014
F3-MW-4-S-B-2014	1131156	F3-MW-1-S-B-2014
F3-MW-1-2014	1137333	F3-MW-4-2014
F3-MW-4-2014	1137336	F3-MW-1-2014

Exova
146 Colonnade Road #8
Ottawa
Ontario
Canada
K2E 7Y1

T: +1 (613) 727-5692
F: +1 (613) 727-5222
E: sales@exova.com
W: www.exova.com

Sample Integrity Scorecard

Summary				
	Total Reports	**Total Pass**	**Total Failed**	**% Passed**
Process	**5**	**0**	**5**	**0**
Data Quality	**5**	**1**	**4**	**20**

Ottawa Workorder: 1418941 (Fox-3)

Process

Were the sample containers packaged well? Yes If No, please explain:
Was the COC received? Yes
Was the COC filled in adequately and legibly? **No please explain: No quotation included on COC**
Was the COC received without damage? Yes If No, please explain:
Were the sample containers clearly labelled? Yes If No, please explain:

Data Quality

Were the samples received within recommended holding times? Yes
Were samples received in containers appropriate to the matrix and analysis required? **No Most samples did have the correct containers but ideally we should have two jars per soil sample and for 3 of the samples we only received one jar.**
Were the expected number of samples received? **No * If No, please explain: 6 samples were not received.**
Were all samples received intact (not damaged/broken)? Yes * If No, please explain:
For water samples only, were they received without a noticeable layer of sediment? N/A If No, please explain:
Was sufficient sample volume received? Yes If No, please explain:

Non-Conformances

Process: 1 Data Quality: 2 *Total: 3*

Ottawa Workorder: 1418943 (Fox-2)

Process

Were the sample containers packaged well? Yes If No, please explain:
Was the COC received? Yes
Was the COC filled in adequately and legibly? **No please explain: No quotation included on COC**
Was the COC received without damage? Yes If No, please explain:
Were the sample containers clearly labelled? Yes If No, please explain:

Data Quality

Were the samples received within recommended holding times? Yes
Were samples received in containers appropriate to the matrix and analysis required? Yes
Were the expected number of samples received? Yes If No, please explain:
Were all samples received intact (not damaged/broken**)? No * If No, please explain: 2 soil jars were received broken**
For water samples only, were they received without a noticeable layer of sediment? N/A If No, please explain:
Was sufficient sample volume received? Yes If No, please explain:

Non-Conformances

Process: 1 Data Quality: 1 *Total: 2*

Ottawa Workorder: 1418944 (Fox-2)

Process

Were the sample containers packaged well? Yes If No, please explain:
Was the COC received? Yes
Was the COC filled in adequately and legibly? **No please explain: No quotation included on COC**

Was the COC received without damage? Yes If No, please explain:
Were the sample containers clearly labelled? Yes If No, please explain:

Data Quality

Were the samples received within recommended holding times? Yes
Were samples received in containers appropriate to the matrix and analysis required? Yes
Were the expected number of samples received? Yes
Were all samples received intact (not damaged/broken)? Yes * If No, please explain:
For water samples only, were they received without a noticeable layer of sediment? N/A If No, please explain:
Was sufficient sample volume received? Yes If No, please explain:

Non-Conformances

Process: 1 Data Quality: 0 *Total: 1*

Ottawa Workorder: 1418982 (Fox-2)

Process

Were the sample containers packaged well? Yes If No, please explain:
Was the COC received? Yes
Was the COC filled in adequately and legibly? **No please explain: No quotation included on COC**
Was the COC received without damage? Yes If No, please explain:
Were the sample containers clearly labelled? Yes If No, please explain:

Data Quality

Were the samples received within recommended holding times? Yes
Were samples received in containers appropriate to the matrix and analysis required? Yes
Were the expected number of samples received? Yes * If No, please explain:
Were all samples received intact (not damaged/broken)? No * If No, please explain: **One of the 1L amber bottles broke during shipping.**
For water samples only, were they received without a noticeable layer of sediment? Yes If No, please explain:
Was sufficient sample volume received? **No If No, please explain: While the appropriate bottles were received there were many bottles with insufficient sample volumes. The lab did the best with what they were given.**

Non-Conformances

Process: 1 Data Quality: 2 *Total: 3*

Ottawa Workorder: 1421066 (Fox-3)

Process

Were the sample containers packaged well? Yes If No, please explain:
Was the COC received? Yes
Was the COC filled in adequately and legibly? **No please explain: No quotation included on COC**
Was the COC received without damage? Yes If No, please explain:
Were the sample containers clearly labelled? Yes If No, please explain:

Data Quality

Were the samples received within recommended holding times? Yes
Were samples received in containers appropriate to the matrix and analysis required? **No Many of the samples only had two of the required 5 bottles. Out of 9 sample sets only 2 had the appropriate bottles.**
Were the expected number of samples received? Yes * If No, please explain:
Were all samples received intact (not damaged/broken)? Yes * If No, please explain:
For water samples only, were they received without a noticeable layer of sediment? **No If No, please explain: One of the metals bottles had sediment which required the MRL's to be raised.**
Was sufficient sample volume received? **No If No, please explain: There were many bottles with insufficient sample volumes. The lab did the best with what they were given.**

Non-Conformances

Process: 1 Data Quality: 3 *Total: 4*

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Dear Jean-Pierre Pelletier:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____

Lorna Wilson
Laboratory Supervisor, Inorganics

APPROVAL: _____

Charlie (Long) Qu
Laboratory Supervisor, Organics

Exova (Ottawa) is certified and accredited for specific parameters by:
CALA, Canadian Association for Laboratory Accreditation (to ISO 17025), OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils), Licensed by Ontario MOE for specific tests in drinking water.

Exova (Mississauga) is accredited for specific parameters by:
SCC, Standards Council of Canada (to ISO 17025)

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only.

Guideline values listed on this report are provided for ease of use (informational purposes) only. Exova recommends consulting the official provincial or federal guideline as required.

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131131 Soil 2014-08-27 F3-1-A-2014	1131132 Soil 2014-08-27 F3-1-B-2014	1131133 Soil 2014-08-27 F3-3-A-2014	1131134 Soil 2014-08-27 F3-4-A-2014
General Chemistry	Moisture	0.1	%			6.8	10.5	16.7	15.8
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			10	6	9	13
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			8	8	8	11
	Cr	1	ug/g			86	163	109	97
	Cu	1	ug/g			30	24	26	39
	Ni	1	ug/g			39	69	43	41
	Pb	1	ug/g			9	5	6	8
	Zn	2	ug/g			52	57	56	82
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131135 Soil 2014-08-27 F3-4-B-2014	1131136 Soil 2014-08-27 F3-5-A-2014	1131137 Soil 2014-08-27 F3-5-B-2014	1131138 Soil 2014-08-27 F3-6-A-2014
General Chemistry	Moisture	0.1	%			14.4	12.7	9.7	14.7
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			12	21	24	24
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			9	16	16	11
	Cr	1	ug/g			95	87	85	87
	Cu	1	ug/g			30	50	56	55
	Ni	1	ug/g			38	51	54	39
	Pb	1	ug/g			5	6	7	8
	Zn	2	ug/g			67	80	87	80
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131139 Soil 2014-08-27 F3-6-B-2014	1131140 Soil 2014-08-27 F3-7-A-2014	1131141 Soil 2014-08-27 F3-7-B-2014	1131142 Soil 2014-08-27 F3-8-A-2014
General Chemistry	Moisture	0.1	%			11.4	14.8	16.9	12.9
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	160
	F3 (C16-C34)	20	ug/g			<20	<20	<20	1050
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			22	16	15	17
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			11	11	11	9
	Cr	1	ug/g			89	83	87	94
	Cu	1	ug/g			50	48	45	40
	Ni	1	ug/g			39	39	41	40
	Pb	1	ug/g			7	8	7	7
	Zn	2	ug/g			78	81	75	66
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131143 Soil 2014-08-27 F3-8-B-2014	1131144 Soil 2014-08-27 F3-9-A-2014	1131145 Soil 2014-08-27 F3-10-A-2014	1131146 Soil 2014-08-27 F3-10-B-2014
General Chemistry	Moisture	0.1	%			13.0	12.0	15.2	14.2
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			30	<10	<10	<10
	F3 (C16-C34)	20	ug/g			240	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			10	13	14	14
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			8	8	12	12
	Cr	1	ug/g			63	81	82	83
	Cu	1	ug/g			33	34	45	40
	Ni	1	ug/g			28	34	38	37
	Pb	1	ug/g			5	6	9	7
	Zn	2	ug/g			58	72	97	82
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131147 Soil 2014-08-27 F3-11-A-2014	1131148 Soil 2014-08-27 F3-11-B-2014	1131149 Soil 2014-08-27 F3-12-A-2014	1131150 Soil 2014-08-27 F3-12-B-2014
General Chemistry	Moisture	0.1	%			12.9	11.0	13.4	12.5
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			23	19	14	17
	Cd	0.5	ug/g			<0.5	0.5	<0.5	<0.5
	Co	1	ug/g			9	9	10	10
	Cr	1	ug/g			74	84	87	77
	Cu	1	ug/g			27	42	38	42
	Ni	1	ug/g			28	32	34	33
	Pb	1	ug/g			6	8	7	8
	Zn	2	ug/g			63	72	78	74
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131151 Soil 2014-08-27 F3-MW-1-S-A-2014	1131152 Soil 2014-08-27 F3-MW-2-S-A-2014	1131153 Soil 2014-08-27 F3-MW-2-S-B-2014	1131154 Soil 2014-08-27 F3-MW-3-S-A-2014
General Chemistry	Moisture	0.1	%			25.1	19.1	12.3	17.8
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			30	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			37	18	14	15
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			12	9	11	11
	Cr	1	ug/g			116	80	104	83
	Cu	1	ug/g			43	34	35	44
	Ni	1	ug/g			50	35	45	37
	Pb	1	ug/g			8	7	7	6
	Zn	2	ug/g			70	65	73	70
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131155 Soil 2014-08-27 F3-MW-4-S-A-2014	1131156 Soil 2014-08-27 F3-MW-4-S-B-2014	1131157 Soil 2014-08-27 F3-MW-5-S-A-2014	1131158 Soil 2014-08-27 F3-MW-5-S-B-2014
General Chemistry	Moisture	0.1	%			19.5	20.2	11.7	13.4
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			29	23	10	18
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			9	9	8	10
	Cr	1	ug/g			87	89	75	93
	Cu	1	ug/g			36	44	28	31
	Ni	1	ug/g			36	35	30	38
	Pb	1	ug/g			7	8	5	6
	Zn	2	ug/g			65	70	62	67
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131159 Soil 2014-08-27 F3-MW-6-S-A-2014	1131160 Soil 2014-08-27 F3-MW-6-S-B-2014	1131161 Soil 2014-08-27 F3-MW-7-S-A-2014	1131162 Soil 2014-08-27 F3-MW-7-S-B-2014
General Chemistry	Moisture	0.1	%			15.2	14.6	15.4	13.3
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			16	18	14	16
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			10	11	10	10
	Cr	1	ug/g			82	91	98	85
	Cu	1	ug/g			40	44	36	38
	Ni	1	ug/g			33	36	38	34
	Pb	1	ug/g			7	8	6	6
	Zn	2	ug/g			74	76	75	73
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131163 Soil 2014-08-27 F3-MW-8-S-A-2014	1131164 Soil 2014-08-27 F3-MW-8-S-B-2014	1131165 Soil 2014-08-27 F3-DUP-1-2014	1131166 Soil 2014-08-27 F3-DUP-4-2014
General Chemistry	Moisture	0.1	%			15.2	18.4	17.1	11.3
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20	<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
Metals	As	1	ug/g			14	18	28	15
	Cd	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	Co	1	ug/g			10	11	10	8
	Cr	1	ug/g			85	96	89	78
	Cu	1	ug/g			40	38	39	36
	Ni	1	ug/g			38	40	38	33
	Pb	1	ug/g			7	7	7	6
	Zn	2	ug/g			80	85	71	59
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02	<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1131167 Soil 2014-08-27 F3-DUP-7-2014	1131168 Soil 2014-08-27 F3-DUP-10-2014
General Chemistry	Moisture	0.1	%			13.8	14.0
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	<10
	F2 (C10-C16)	10	ug/g			<10	<10
	F3 (C16-C34)	20	ug/g			<20	<20
Mercury	Hg	0.1	ug/g			<0.1	<0.1
Metals	As	1	ug/g			20	12
	Cd	0.5	ug/g			<0.5	<0.5
	Co	1	ug/g			10	10
	Cr	1	ug/g			97	81
	Cu	1	ug/g			40	38
	Ni	1	ug/g			40	38
	Pb	1	ug/g			7	7
	Zn	2	ug/g			75	82
PCBs	Polychlorinated Biphenyls (PCBs)	0.02	ug/g			<0.02	<0.02

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis Date** 2014-09-06 **Method** SW846 8081A/8082A			
Polychlorinated Biphenyls (PCBs)	<0.02 ug/g	102	50-120
Run No 249261 **Analysis Date** 2014-09-05 **Method** SW846 8081A/8082A			
Polychlorinated Biphenyls (PCBs)	<0.02 ug/g	102	50-120
Run No 275801 **Analysis Date** 2014-09-08 **Method** EPA 200.8			
As	<1 ug/g	98	70-130
Cd	<0.5 ug/g	82	70-130
Co	<1 ug/g	89	70-130
Cr	<1 ug/g	90	70-130
Cu	<1 ug/g	91	70-130
Ni	<1 ug/g	91	70-130
Pb	<1 ug/g	85	70-130
Zn	<2 ug/g	94	70-130
Run No 275861 **Analysis Date** 2014-09-09 **Method** EPA 200.8			
As	<1 ug/g	100	70-130

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Cd	<0.5 ug/g	93	70-130
Co	<1 ug/g	94	70-130
Cr	<1 ug/g	95	70-130
Cu	<1 ug/g	95	70-130
Ni	<1 ug/g	93	70-130
Pb	<1 ug/g	96	70-130
Zn	<2 ug/g	98	70-130
Run No 275875 **Analysis Date** 2014-09-09 **Method** M SM3112B-3500B			
Hg	<0.1 ug/g	92	70-130
Run No 276008 **Analysis Date** 2014-09-11 **Method** CCME			
F1 (C6-C10)	<10 ug/g	95	80-120
Run No 276009 **Analysis Date** 2014-09-11 **Method** C SM2540B			
Moisture	<0.1 %	100	80-120
Run No 276011 **Analysis Date** 2014-09-11 **Method** CCME			
F2 (C10-C16)	<10 ug/g	83	50-120
F3 (C16-C34)	<20 ug/g	83	50-120
Run No 276013 **Analysis Date** 2014-09-11 **Method** C SM2540B			

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1418941
Date Submitted: 2014-09-04
Date Reported: 2014-09-11
Project: Dew Line Monitoring
COC #: 789380

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Moisture	<0.1 %	100	80-120
Run No 276027 **Analysis Date** 2014-09-11 **Method** CCME			
F2 (C10-C16)	<10 ug/g	87	50-120
F3 (C16-C34)	<20 ug/g	87	50-120

Guideline = *** = Guideline Exceedence**
** = Analysis completed at Mississauga, Ontario.
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

EXOVA ENVIRONMENTAL ONTARIO

Certificate of Analysis

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1421066
Date Submitted: 2014-09-15
Date Reported: 2014-10-03
Project: Fox-3
COC #: 790299

Dear Jean-Pierre Pelletier:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Nadine Pinsonneault
Team Leader, Inorganics

APPROVAL: _____
Charlie (Long) Qu
Laboratory Supervisor, Organics

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Exova Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Exova (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Exova (Mississauga) is accredited for specific parameters by SCC, Standards Council of Canada (to ISO 17025)

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Exova recommends consulting the official provincial or federal guideline as required.

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1421066
Date Submitted: 2014-09-15
Date Reported: 2014-10-03
Project: Fox-3
COC #: 790299

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1137333 Water 2014-08-27 F3-MW-1-2014	1137334 Water 2014-08-27 F3-MW-2-2014	1137335 Water 2014-08-27 F3-MW-3-2014	1137336 Water 2014-08-27 F3-MW-4-2014
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20			<20
	F2 (C10-C16)	20	ug/L		<20			<20
	F3 (C16-C34)	50	ug/L		<50			340
Mercury	Hg Total	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001
Metals	As	0.02	mg/L		<0.02	<0.02	<0.02	0.05
	Cd	0.008	mg/L		<0.008	<0.008	<0.008	<0.008
	Co	0.01	mg/L		0.08	0.02	0.02	0.09
	Cr	0.05	mg/L		0.11	<0.05	0.26	0.24
	Cu	0.01	mg/L		0.04	0.19	0.04	0.16
	Ni	0.01	mg/L		0.28	0.14	0.30	0.43
	Pb	0.01	mg/L		0.01	0.06	<0.01	0.03
	Zn	0.04	mg/L		0.15	0.26	2.36	0.35
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L		<0.1	<0.1	<0.1	<0.1

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1137337 Water 2014-08-27 F3-MW-5-2014	1137338 Water 2014-08-27 F3-MW-6-2014	1137339 Water 2014-08-27 F3-MW-7-2014	1137340 Water 2014-08-27 F3-MW-8-2014
Mercury	Hg Total	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001
Metals	As	0.02	mg/L		0.04	<0.02	0.02	<0.02
	Cd	0.008	mg/L		<0.008	<0.008	<0.008	<0.008
	Co	0.01	mg/L		0.07	<0.01	0.03	<0.01
	Cr	0.05	mg/L		0.23	0.09	0.54	0.14
	Cu	0.01	mg/L		0.18	0.14	0.16	0.04

Guideline = *** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1421066
Date Submitted: 2014-09-15
Date Reported: 2014-10-03
Project: Fox-3
COC #: 790299

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1137337 Water 2014-08-27 F3-MW-5-2014	1137338 Water 2014-08-27 F3-MW-6-2014	1137339 Water 2014-08-27 F3-MW-7-2014	1137340 Water 2014-08-27 F3-MW-8-2014
Metals	Ni	0.01	mg/L		0.27	0.09	0.42	0.10
	Pb	0.01	mg/L		0.09	0.03	0.03	0.02
	Zn	0.04	mg/L		5.28	0.68	1.14	0.51
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L			<0.1	<0.1	<0.1
		0.5	ug/L		<0.5			

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1137341 Water 2014-08-27 F3-DUP-A-2014
Mercury	Hg Total	0.0001	mg/L		<0.0001
Metals	As	0.02	mg/L		<0.02
	Cd	0.008	mg/L		<0.008
	Co	0.01	mg/L		<0.01
	Cr	0.05	mg/L		0.13
	Cu	0.01	mg/L		0.13
	Ni	0.01	mg/L		0.10
	Pb	0.01	mg/L		0.03
	Zn	0.04	mg/L		0.68

Guideline = *** = Guideline Exceedence**

All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1421066
Date Submitted: 2014-09-15
Date Reported: 2014-10-03
Project: Fox-3
COC #: 790299

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 249261 **Analysis Date** 2014-10-02 **Method** P 8081A			
Polychlorinated Biphenyls (PCBs)	<0.1 ug/L	89	50-120
Run No 277293 **Analysis Date** 2014-10-02 **Method** M SM3112B-3500B			
Hg Total	<0.0001 mg/L		
Run No 277328 **Analysis Date** 2014-10-03 **Method** O CCME Reg 153			
F1 (C6-C10)	<20 ug/L	100	80-120
Run No 277338 **Analysis Date** 2014-10-03 **Method** O CCME Reg 153			
F1 (C6-C10)	<20 ug/L	100	80-120
Run No 277362 **Analysis Date** 2014-10-03 **Method** EPA 200.8			
As	<0.02 mg/L	103	70-130
Cd	<0.008 mg/L	95	70-130
Co	<0.01 mg/L	95	70-130
Cr	<0.05 mg/L	98	70-130
Cu	<0.01 mg/L	100	70-130
Ni	<0.01 mg/L	97	70-130

Guideline = *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1421066
Date Submitted: 2014-09-15
Date Reported: 2014-10-03
Project: Fox-3
COC #: 790299

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Pb	<0.01 mg/L	94	70-130
Zn	<0.04 mg/L	99	70-130
Run No 277370 **Analysis Date** 2014-10-03 **Method** O CCME Reg 153			
F2 (C10-C16)	<20 ug/L	100	50-120
F3 (C16-C34)	<50 ug/L	100	50-120

Guideline = *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Sila Remediation Inc.
200-4495 Boul. Wilfrid-Hamel
Québec, QC
G1P 2J7
Attention: Mr. Jean-Pierre Pelletier
PO#:
Invoice to: Sila Remediation Inc.

Report Number: 1421066
Date Submitted: 2014-09-15
Date Reported: 2014-10-03
Project: Fox-3
COC #: 790299

Sample Comment Summary

Sample ID: 1137333	F3-MW-1-2014	Metals analysis for this report performed on aqua-regia digest of sample material.
Sample ID: 1137337	F3-MW-5-2014	PCB MRL elevated due to insufficient sample volume. Less than 200 mL provided.
Sample ID: 1137339	F3-MW-7-2014	PCB MRL elevated due to insufficient sample volume. Less than 200 mL provided.

Guideline = *** = Guideline Exceedence**
All analysis completed in Ottawa, Ontario (unless otherwise indicated by ** which indicates analysis was completed in Mississauga, Ontario).
Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Your Project #: MB4G1500
Your C.O.C. #: 1 OF 1

Attention: SUB CONTRACTOR
MAXXAM ANALYTICS
CAMPOBELLO
6740 CAMPOBELLO ROAD
MISSISSAUGA, ON
CANADA L5N 2L8

Report Date: 2014/09/11
Report #: R1640161
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B478301
Received: 2014/09/05, 08:55

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Cadmium - low level CCME (Total)	1	2014/09/05	2014/09/11	AB SOP-00014 / AB SOP-00043	EPA 200.8 R5.4 m
Elements by ICP - Total	1	2014/09/08	2014/09/09	AB SOP-00014 / AB SOP-00042	EPA 200.7 CFR 2012 m
Elements by ICPMS - Total	1	2014/09/08	2014/09/11	AB SOP-00014 / AB SOP-00043	EPA 200.8 R5.4 m

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

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

Cynny Hagen, Project Manager Assistant
Email: CHagen@maxxam.ca
Phone# (403) 735-2273

==========

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 #: B478301
Report Date: 2014/09/11

MAXXAM ANALYTICS
Client Project #: MB4G1500

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		KN2441		
Sampling Date		2014/08/27		
COC Number		1 OF 1		
	UNITS	**F3-DUP-B-2014 (XK4850-01R)**	**RDL**	**QC Batch**
Low Level Elements				
Total Cadmium (Cd)	ug/L	0.99	0.020	7626950
Elements				
Total Aluminum (Al)	mg/L	17	0.0030	7629630
Total Antimony (Sb)	mg/L	<0.00060	0.00060	7629630
Total Arsenic (As)	mg/L	0.015	0.00020	7629630
Total Barium (Ba)	mg/L	0.11	0.010	7629638
Total Beryllium (Be)	mg/L	0.0035	0.0010	7629630
Total Boron (B)	mg/L	0.033	0.020	7629638
Total Calcium (Ca)	mg/L	31	0.30	7629638
Total Chromium (Cr)	mg/L	0.060	0.0010	7629630
Total Cobalt (Co)	mg/L	0.010	0.00030	7629630
Total Copper (Cu)	mg/L	0.12	0.00020	7629630
Total Iron (Fe)	mg/L	15	0.060	7629638
Total Lead (Pb)	mg/L	0.025	0.00020	7629630
Total Lithium (Li)	mg/L	0.021	0.020	7629638
Total Magnesium (Mg)	mg/L	10	0.20	7629638
Total Manganese (Mn)	mg/L	0.34	0.0040	7629638
Total Molybdenum (Mo)	mg/L	0.0097	0.00020	7629630
Total Nickel (Ni)	mg/L	0.069	0.00050	7629630
Total Phosphorus (P)	mg/L	0.31	0.10	7629638
Total Potassium (K)	mg/L	5.2	0.30	7629638
Total Selenium (Se)	mg/L	0.00073	0.00020	7629630
Total Silicon (Si)	mg/L	33	0.10	7629638
Total Silver (Ag)	mg/L	0.0017	0.00010	7629630
Total Sodium (Na)	mg/L	32	0.50	7629638
Total Strontium (Sr)	mg/L	0.14	0.020	7629638
Total Sulphur (S)	mg/L	5.7	0.20	7629638
Total Thallium (Tl)	mg/L	<0.00020	0.00020	7629630
Total Tin (Sn)	mg/L	0.0034	0.0010	7629630
Total Titanium (Ti)	mg/L	0.13	0.0010	7629630
Total Uranium (U)	mg/L	0.0080	0.00010	7629630
Total Vanadium (V)	mg/L	0.018	0.0010	7629630

RDL = Reportable Detection Limit

Maxxam Job #: B478301
Report Date: 2014/09/11

MAXXAM ANALYTICS
Client Project #: MB4G1500

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		KN2441		
Sampling Date		2014/08/27		
COC Number		1 OF 1		
	UNITS	**F3-DUP-B-2014 (XK4850-01R)**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.73	0.0030	7629630

RDL = Reportable Detection Limit

Maxxam Job #: B478301
Report Date: 2014/09/11

MAXXAM ANALYTICS
Client Project #: MB4G1500

Package 1	4.3°C

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

General Comments

Results relate only to the items tested.

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB4G1500
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: CB478301

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7629630	KA3	Matrix Spike	Total Aluminum (Al)	2014/09/11		NC	%	80 - 120
			Total Antimony (Sb)	2014/09/11		96	%	80 - 120
			Total Arsenic (As)	2014/09/11		96	%	80 - 120
			Total Beryllium (Be)	2014/09/11		100	%	80 - 120
			Total Chromium (Cr)	2014/09/11		98	%	80 - 120
			Total Cobalt (Co)	2014/09/11		94	%	80 - 120
			Total Copper (Cu)	2014/09/11		96	%	80 - 120
			Total Lead (Pb)	2014/09/11		94	%	80 - 120
			Total Molybdenum (Mo)	2014/09/11		103	%	80 - 120
			Total Nickel (Ni)	2014/09/11		96	%	80 - 120
			Total Selenium (Se)	2014/09/11		100	%	80 - 120
			Total Silver (Ag)	2014/09/11		89	%	80 - 120
			Total Thallium (Tl)	2014/09/11		95	%	80 - 120
			Total Tin (Sn)	2014/09/11		100	%	80 - 120
			Total Titanium (Ti)	2014/09/11		100	%	80 - 120
			Total Uranium (U)	2014/09/11		98	%	80 - 120
			Total Vanadium (V)	2014/09/11		104	%	80 - 120
			Total Zinc (Zn)	2014/09/11		94	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2014/09/10		98	%	80 - 120
			Total Antimony (Sb)	2014/09/10		98	%	80 - 120
			Total Arsenic (As)	2014/09/10		96	%	80 - 120
			Total Beryllium (Be)	2014/09/10		95	%	80 - 120
			Total Chromium (Cr)	2014/09/10		96	%	80 - 120
			Total Cobalt (Co)	2014/09/10		92	%	80 - 120
			Total Copper (Cu)	2014/09/10		96	%	80 - 120
			Total Lead (Pb)	2014/09/10		100	%	80 - 120
			Total Molybdenum (Mo)	2014/09/10		102	%	80 - 120
			Total Nickel (Ni)	2014/09/10		96	%	80 - 120
			Total Selenium (Se)	2014/09/10		98	%	80 - 120
			Total Silver (Ag)	2014/09/10		93	%	80 - 120
			Total Thallium (Tl)	2014/09/10		102	%	80 - 120
			Total Tin (Sn)	2014/09/10		103	%	80 - 120
			Total Titanium (Ti)	2014/09/10		96	%	80 - 120
			Total Uranium (U)	2014/09/10		93	%	80 - 120
			Total Vanadium (V)	2014/09/10		101	%	80 - 120
			Total Zinc (Zn)	2014/09/10		91	%	80 - 120
		Method Blank	Total Aluminum (Al)	2014/09/11	<0.0030		mg/L	
			Total Antimony (Sb)	2014/09/11	<0.00060		mg/L	
			Total Arsenic (As)	2014/09/11	0.00023, RDL=0.00020		mg/L	
			Total Beryllium (Be)	2014/09/11	<0.0010		mg/L	
			Total Chromium (Cr)	2014/09/11	<0.0010		mg/L	
			Total Cobalt (Co)	2014/09/11	<0.00030		mg/L	
			Total Copper (Cu)	2014/09/11	<0.00020		mg/L	
			Total Lead (Pb)	2014/09/11	<0.00020		mg/L	
			Total Molybdenum (Mo)	2014/09/11	<0.00020		mg/L	
			Total Nickel (Ni)	2014/09/11	<0.00050		mg/L	
			Total Selenium (Se)	2014/09/11	0.00022, RDL=0.00020		mg/L	
			Total Silver (Ag)	2014/09/11	<0.00010		mg/L	
			Total Thallium (Tl)	2014/09/11	<0.00020		mg/L	
			Total Tin (Sn)	2014/09/11	<0.0010		mg/L	
			Total Titanium (Ti)	2014/09/11	<0.0010		mg/L	
			Total Uranium (U)	2014/09/11	<0.00010		mg/L	
			Total Vanadium (V)	2014/09/11	<0.0010		mg/L	
			Total Zinc (Zn)	2014/09/11	<0.0030		mg/L	
		RPD	Total Aluminum (Al)	2014/09/11	8.0		%	20

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB4G1500
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB478301

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7629630	KA3	RPD	Total Antimony (Sb)	2014/09/11	NC		%	20
			Total Arsenic (As)	2014/09/11	1.3		%	20
			Total Beryllium (Be)	2014/09/11	NC		%	20
			Total Chromium (Cr)	2014/09/11	NC		%	20
			Total Cobalt (Co)	2014/09/11	NC		%	20
			Total Copper (Cu)	2014/09/11	NC		%	20
			Total Lead (Pb)	2014/09/11	NC		%	20
			Total Molybdenum (Mo)	2014/09/11	NC		%	20
			Total Nickel (Ni)	2014/09/11	NC		%	20
			Total Selenium (Se)	2014/09/11	NC		%	20
			Total Silver (Ag)	2014/09/11	NC		%	20
			Total Thallium (Tl)	2014/09/11	NC		%	20
			Total Tin (Sn)	2014/09/11	NC		%	20
			Total Titanium (Ti)	2014/09/11	NC		%	20
			Total Uranium (U)	2014/09/11	NC		%	20
			Total Vanadium (V)	2014/09/11	NC		%	20
			Total Zinc (Zn)	2014/09/11	NC		%	20
7629638	STI	Matrix Spike	Total Barium (Ba)	2014/09/09		93	%	80 - 120
			Total Boron (B)	2014/09/09		98	%	80 - 120
			Total Calcium (Ca)	2014/09/09		NC	%	80 - 120
			Total Iron (Fe)	2014/09/09		98	%	80 - 120
			Total Lithium (Li)	2014/09/09		97	%	80 - 120
			Total Magnesium (Mg)	2014/09/09		NC	%	80 - 120
			Total Manganese (Mn)	2014/09/09		105	%	80 - 120
			Total Phosphorus (P)	2014/09/09		96	%	80 - 120
			Total Potassium (K)	2014/09/09		98	%	80 - 120
			Total Silicon (Si)	2014/09/09		100	%	80 - 120
			Total Sodium (Na)	2014/09/09		101	%	80 - 120
			Total Strontium (Sr)	2014/09/09		95	%	80 - 120
		Spiked Blank	Total Barium (Ba)	2014/09/09		93	%	80 - 120
			Total Boron (B)	2014/09/09		97	%	80 - 120
			Total Calcium (Ca)	2014/09/09		98	%	80 - 120
			Total Iron (Fe)	2014/09/09		98	%	80 - 120
			Total Lithium (Li)	2014/09/09		96	%	80 - 120
			Total Magnesium (Mg)	2014/09/09		101	%	80 - 120
			Total Manganese (Mn)	2014/09/09		105	%	80 - 120
			Total Phosphorus (P)	2014/09/09		95	%	80 - 120
			Total Potassium (K)	2014/09/09		96	%	80 - 120
			Total Silicon (Si)	2014/09/09		98	%	80 - 120
			Total Sodium (Na)	2014/09/09		100	%	80 - 120
			Total Strontium (Sr)	2014/09/09		96	%	80 - 120
		Method Blank	Total Barium (Ba)	2014/09/09	<0.010		mg/L	
			Total Boron (B)	2014/09/09	<0.020		mg/L	
			Total Calcium (Ca)	2014/09/09	<0.30		mg/L	
			Total Iron (Fe)	2014/09/09	<0.060		mg/L	
			Total Lithium (Li)	2014/09/09	<0.020		mg/L	
			Total Magnesium (Mg)	2014/09/09	<0.20		mg/L	
			Total Manganese (Mn)	2014/09/09	<0.0040		mg/L	
			Total Phosphorus (P)	2014/09/09	<0.10		mg/L	
			Total Potassium (K)	2014/09/09	<0.30		mg/L	
			Total Silicon (Si)	2014/09/09	<0.10		mg/L	
			Total Sodium (Na)	2014/09/09	<0.50		mg/L	
			Total Strontium (Sr)	2014/09/09	<0.020		mg/L	
			Total Sulphur (S)	2014/09/09	<0.20		mg/L	
		RPD	Total Barium (Ba)	2014/09/09	0.9		%	20

MAXXAM ANALYTICS
Attention: SUB CONTRACTOR
Client Project #: MB4G1500
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: CB478301

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7629638	STI	RPD	Total Boron (B)	2014/09/09	NC		%	20
			Total Calcium (Ca)	2014/09/09	0.8		%	20
			Total Iron (Fe)	2014/09/09	NC		%	20
			Total Lithium (Li)	2014/09/09	NC		%	20
			Total Magnesium (Mg)	2014/09/09	0.8		%	20
			Total Manganese (Mn)	2014/09/09	0.2		%	20
			Total Phosphorus (P)	2014/09/09	NC		%	20
			Total Potassium (K)	2014/09/09	2.1		%	20
			Total Silicon (Si)	2014/09/09	1.8		%	20
			Total Sodium (Na)	2014/09/09	1		%	20
			Total Strontium (Sr)	2014/09/09	1.2		%	20
			Total Sulphur (S)	2014/09/09	2.1		%	20

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.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Validation Signature Page

Maxxam Job #: B478301

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

Peng Liang, Analyst II

==========

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.

Success Through Science®

Your Project #: FOX-3
Site Location: DEWER LAKE
Your C.O.C. #: 23244

Attention:Jean-Pierre Pelletier

Biogenie Inc
Quebec
1170, rue Levis
Terrebonne, QC
CANADA J6W 5S6

Report Date: 2014/09/12
Report #: R3154333
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4G1500
Received: 2014/09/03, 13:10

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Petroleum Hydro. CCME F1 & BTEX in Soil	4	2014/09/05	2014/09/08	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil	4	2014/09/05	2014/09/06	OTT SOP-00001	CCME CWS
Strong Acid Leachable Metals by ICPMS (1)	4	2014/09/09	2014/09/10	CAM SOP-00447	EPA 6020 m
MOISTURE	4	N/A	2014/09/08	CAM SOP-00445	McKeague 2nd ed 1978
Polychlorinated Biphenyl in Soil (1)	3	2014/09/06	2014/09/07	CAM SOP-00309	EPA 8082 m
Polychlorinated Biphenyl in Soil (1)	1	2014/09/09	2014/09/09	CAM SOP-00309	EPA 8082 m

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Parnian Baber, Project Manager
Email: pbaber@maxxam.ca
Phone# (613) 274-0573
==========
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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

RESULTS OF ANALYSES OF SOIL

Maxxam ID		XK4846	XK4847	XK4848	XK4849		
Sampling Date		2014/08/27	2014/08/27	2014/08/27	2014/08/27		
COC Number		23244	23244	23244	23244		
	Units	**F3-DUP-2-2014**	**F3-DUP-5-2014**	**F3-DUP-8-2014**	**F3-DUP-11-2014**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	23	13	15	14	0.2	3734887

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		XK4846	XK4847	XK4848	XK4849		
Sampling Date		2014/08/27	2014/08/27	2014/08/27	2014/08/27		
COC Number		23244	23244	23244	23244		
	Units	**F3-DUP-2-2014**	**F3-DUP-5-2014**	**F3-DUP-8-2014**	**F3-DUP-11-2014**	**RDL**	**QC Batch**
Metals							
Acid Extractable Antimony (Sb)	ug/g	ND	ND	ND	0.29	0.20	3741284
Acid Extractable Arsenic (As)	ug/g	28	18	14	14	1.0	3741284
Acid Extractable Barium (Ba)	ug/g	160	120	170	190	0.50	3741284
Acid Extractable Beryllium (Be)	ug/g	0.65	0.46	0.63	0.74	0.20	3741284
Acid Extractable Boron (B)	ug/g	ND	ND	ND	ND	5.0	3741284
Acid Extractable Cadmium (Cd)	ug/g	ND	ND	ND	0.15	0.10	3741284
Acid Extractable Chromium (Cr)	ug/g	91	63	78	81	1.0	3741284
Acid Extractable Cobalt (Co)	ug/g	10	8.2	10	12	0.10	3741284
Acid Extractable Copper (Cu)	ug/g	39	35	34	43	0.50	3741284
Acid Extractable Lead (Pb)	ug/g	7.9	7.1	6.7	8.9	1.0	3741284
Acid Extractable Molybdenum (Mo)	ug/g	1.5	1.5	1.2	1.6	0.50	3741284
Acid Extractable Nickel (Ni)	ug/g	38	26	30	37	0.50	3741284
Acid Extractable Selenium (Se)	ug/g	ND	0.52	ND	ND	0.50	3741284
Acid Extractable Silver (Ag)	ug/g	0.22	ND	ND	ND	0.20	3741284
Acid Extractable Thallium (Tl)	ug/g	0.49	0.40	0.55	0.56	0.050	3741284
Acid Extractable Uranium (U)	ug/g	3.6	2.5	2.7	3.3	0.050	3741284
Acid Extractable Vanadium (V)	ug/g	58	47	61	64	5.0	3741284
Acid Extractable Zinc (Zn)	ug/g	69	55	69	91	5.0	3741284
Acid Extractable Mercury (Hg)	ug/g	ND	ND	ND	ND	0.050	3741284

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		XK4846	XK4847	XK4848	XK4849		
Sampling Date		2014/08/27	2014/08/27	2014/08/27	2014/08/27		
COC Number		23244	23244	23244	23244		
	Units	**F3-DUP-2-2014**	**F3-DUP-5-2014**	**F3-DUP-8-2014**	**F3-DUP-11-2014**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Benzene	ug/g	ND	ND	ND	ND	0.005	3737266
Toluene	ug/g	ND	ND	ND	ND	0.02	3737266
Ethylbenzene	ug/g	ND	ND	ND	ND	0.01	3737266
o-Xylene	ug/g	ND	ND	ND	ND	0.02	3737266
p+m-Xylene	ug/g	ND	ND	ND	ND	0.04	3737266
Total Xylenes	ug/g	ND	ND	ND	ND	0.04	3737266
F1 (C6-C10)	ug/g	ND	ND	ND	ND	10	3737266
F1 (C6-C10) - BTEX	ug/g	ND	ND	ND	ND	10	3737266
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	ND	ND	ND	ND	10	3734927
F3 (C16-C34 Hydrocarbons)	ug/g	ND	ND	ND	ND	10	3734927
F4 (C34-C50 Hydrocarbons)	ug/g	ND	ND	ND	ND	10	3734927
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes		3734927
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	121	122	124	126		3737266
4-Bromofluorobenzene	%	87	86	73	80		3737266
D10-Ethylbenzene	%	83	84	86	87		3737266
D4-1,2-Dichloroethane	%	122	125	119	121		3737266
o-Terphenyl	%	79	77	78	81		3734927

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		XK4846	XK4847	XK4848		XK4849		
Sampling Date		2014/08/27	2014/08/27	2014/08/27		2014/08/27		
COC Number		23244	23244	23244		23244		
	Units	**F3-DUP-2-2014**	**F3-DUP-5-2014**	**F3-DUP-8-2014**	**QC Batch**	**F3-DUP-11-2014**	**RDL**	**QC Batch**
PCBs								
Aroclor 1242	ug/g	ND	ND	ND	3738673	ND	0.010	3740733
Aroclor 1248	ug/g	ND	ND	ND	3738673	ND	0.010	3740733
Aroclor 1254	ug/g	ND	ND	ND	3738673	ND	0.010	3740733
Aroclor 1260	ug/g	ND	ND	ND	3738673	ND	0.010	3740733
Total PCB	ug/g	ND	ND	ND	3738673	ND	0.010	3740733
Surrogate Recovery (%)								
Decachlorobiphenyl	%	71	72	68	3738673	100		3740733

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

GENERAL COMMENTS

Cooler custody seal was present and intact on the cooler.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3734887	LHR	RPD	Moisture	2014/09/08	12		%	50
3734927	AH1	Matrix Spike	o-Terphenyl	2014/09/08		90	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/08		97	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2014/09/08		97	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2014/09/08		97	%	50 - 130
3734927	AH1	Spiked Blank	o-Terphenyl	2014/09/06		82	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/06		85	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2014/09/06		85	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2014/09/06		85	%	80 - 120
3734927	AH1	Method Blank	o-Terphenyl	2014/09/06		77	%	30 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/06	ND , RDL=10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2014/09/06	ND , RDL=10		ug/g	
			F4 (C34-C50 Hydrocarbons)	2014/09/06	ND , RDL=10		ug/g	
3734927	AH1	RPD	F2 (C10-C16 Hydrocarbons)	2014/09/06	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2014/09/06	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2014/09/06	NC		%	50
3737266	LGA	Matrix Spike [XK4847-02]	1,4-Difluorobenzene	2014/09/08		126	%	60 - 140
			4-Bromofluorobenzene	2014/09/08		86	%	60 - 140
			D10-Ethylbenzene	2014/09/08		95	%	30 - 130
			D4-1,2-Dichloroethane	2014/09/08		129	%	60 - 140
			Benzene	2014/09/08		78	%	60 - 140
			Toluene	2014/09/08		75	%	60 - 140
			Ethylbenzene	2014/09/08		78	%	60 - 140
			o-Xylene	2014/09/08		81	%	60 - 140
			p+m-Xylene	2014/09/08		70	%	60 - 140
			F1 (C6-C10)	2014/09/08		91	%	60 - 140
3737266	LGA	Spiked Blank	1,4-Difluorobenzene	2014/09/06		130	%	60 - 140
			4-Bromofluorobenzene	2014/09/06		77	%	60 - 140
			D10-Ethylbenzene	2014/09/06		99	%	30 - 130
			D4-1,2-Dichloroethane	2014/09/06		123	%	60 - 140
			Benzene	2014/09/06		88	%	60 - 140
			Toluene	2014/09/06		79	%	60 - 140
			Ethylbenzene	2014/09/06		75	%	60 - 140
			o-Xylene	2014/09/06		78	%	60 - 140
			p+m-Xylene	2014/09/06		71	%	60 - 140
			F1 (C6-C10)	2014/09/06		93	%	80 - 120
3737266	LGA	Method Blank	1,4-Difluorobenzene	2014/09/06		126	%	60 - 140
			4-Bromofluorobenzene	2014/09/06		70	%	60 - 140
			D10-Ethylbenzene	2014/09/06		104	%	30 - 130
			D4-1,2-Dichloroethane	2014/09/06		127	%	60 - 140
			Benzene	2014/09/06	ND , RDL=0.005		ug/g	
			Toluene	2014/09/06	ND , RDL=0.02		ug/g	
			Ethylbenzene	2014/09/06	ND , RDL=0.01		ug/g	
			o-Xylene	2014/09/06	ND , RDL=0.02		ug/g	

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			p+m-Xylene	2014/09/06	ND , RDL=0.04		ug/g	
			Total Xylenes	2014/09/06	ND , RDL=0.04		ug/g	
			F1 (C6-C10)	2014/09/06	ND , RDL=10		ug/g	
			F1 (C6-C10) - BTEX	2014/09/06	ND , RDL=10		ug/g	
3737266	LGA	RPD [XK4846-02]	Benzene	2014/09/08	NC		%	50
			Toluene	2014/09/08	NC		%	50
			Ethylbenzene	2014/09/08	NC		%	50
			o-Xylene	2014/09/08	NC		%	50
			p+m-Xylene	2014/09/08	NC		%	50
			Total Xylenes	2014/09/08	NC		%	50
			F1 (C6-C10)	2014/09/08	NC		%	50
			F1 (C6-C10) - BTEX	2014/09/08	NC		%	50
3738673	RBA	Matrix Spike	Decachlorobiphenyl	2014/09/07		76	%	60 - 130
			Aroclor 1260	2014/09/07		81	%	60 - 130
			Total PCB	2014/09/07		81	%	60 - 130
3738673	RBA	Spiked Blank	Decachlorobiphenyl	2014/09/07		81	%	60 - 130
			Aroclor 1260	2014/09/07		90	%	60 - 130
			Total PCB	2014/09/07		90	%	60 - 130
3738673	RBA	Method Blank	Decachlorobiphenyl	2014/09/07		73	%	60 - 130
			Aroclor 1242	2014/09/07	ND , RDL=0.010		ug/g	
			Aroclor 1248	2014/09/07	ND , RDL=0.010		ug/g	
			Aroclor 1254	2014/09/07	ND , RDL=0.010		ug/g	
			Aroclor 1260	2014/09/07	ND , RDL=0.010		ug/g	
			Total PCB	2014/09/07	ND , RDL=0.010		ug/g	
3738673	RBA	RPD	Aroclor 1242	2014/09/07	NC		%	50
			Aroclor 1248	2014/09/07	NC		%	50
			Aroclor 1254	2014/09/07	NC		%	50
			Aroclor 1260	2014/09/07	NC		%	50
			Total PCB	2014/09/07	NC		%	50
3740733	LPG	Matrix Spike	Decachlorobiphenyl	2014/09/09		95	%	60 - 130
			Aroclor 1260	2014/09/09		114	%	60 - 130
			Total PCB	2014/09/09		114	%	60 - 130
3740733	LPG	Spiked Blank	Decachlorobiphenyl	2014/09/09		94	%	60 - 130
			Aroclor 1260	2014/09/09		115	%	60 - 130
			Total PCB	2014/09/09		115	%	60 - 130
3740733	LPG	Method Blank	Decachlorobiphenyl	2014/09/09		88	%	60 - 130
			Aroclor 1242	2014/09/09	ND , RDL=0.010		ug/g	
			Aroclor 1248	2014/09/09	ND , RDL=0.010		ug/g	
			Aroclor 1254	2014/09/09	ND , RDL=0.010		ug/g	

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Aroclor 1260	2014/09/09	ND , RDL=0.010		ug/g	
			Total PCB	2014/09/09	ND , RDL=0.010		ug/g	
3740733	LPG	RPD	Aroclor 1242	2014/09/09	NC		%	50
			Aroclor 1248	2014/09/09	NC		%	50
			Aroclor 1254	2014/09/09	NC		%	50
			Aroclor 1260	2014/09/09	NC		%	50
			Total PCB	2014/09/09	NC		%	50
3741284	GBU	Matrix Spike	Acid Extractable Antimony (Sb)	2014/09/10		95	%	75 - 125
			Acid Extractable Arsenic (As)	2014/09/10		96	%	75 - 125
			Acid Extractable Barium (Ba)	2014/09/10		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2014/09/10		106	%	75 - 125
			Acid Extractable Boron (B)	2014/09/10		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2014/09/10		102	%	75 - 125
			Acid Extractable Chromium (Cr)	2014/09/10		NC	%	75 - 125
			Acid Extractable Cobalt (Co)	2014/09/10		99	%	75 - 125
			Acid Extractable Copper (Cu)	2014/09/10		NC	%	75 - 125
			Acid Extractable Lead (Pb)	2014/09/10		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2014/09/10		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2014/09/10		NC	%	75 - 125
			Acid Extractable Selenium (Se)	2014/09/10		97	%	75 - 125
			Acid Extractable Silver (Ag)	2014/09/10		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2014/09/10		91	%	75 - 125
			Acid Extractable Uranium (U)	2014/09/10		92	%	75 - 125
			Acid Extractable Vanadium (V)	2014/09/10		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2014/09/10		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2014/09/10		97	%	75 - 125
3741284	GBU	Spiked Blank	Acid Extractable Antimony (Sb)	2014/09/10		109	%	80 - 120
			Acid Extractable Arsenic (As)	2014/09/10		101	%	80 - 120
			Acid Extractable Barium (Ba)	2014/09/10		103	%	80 - 120
			Acid Extractable Beryllium (Be)	2014/09/10		103	%	80 - 120
			Acid Extractable Boron (B)	2014/09/10		102	%	80 - 120
			Acid Extractable Cadmium (Cd)	2014/09/10		103	%	80 - 120
			Acid Extractable Chromium (Cr)	2014/09/10		102	%	80 - 120
			Acid Extractable Cobalt (Co)	2014/09/10		105	%	80 - 120
			Acid Extractable Copper (Cu)	2014/09/10		104	%	80 - 120
			Acid Extractable Lead (Pb)	2014/09/10		101	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2014/09/10		105	%	80 - 120
			Acid Extractable Nickel (Ni)	2014/09/10		101	%	80 - 120
			Acid Extractable Selenium (Se)	2014/09/10		100	%	80 - 120
			Acid Extractable Silver (Ag)	2014/09/10		103	%	80 - 120
			Acid Extractable Thallium (Tl)	2014/09/10		96	%	80 - 120
			Acid Extractable Uranium (U)	2014/09/10		95	%	80 - 120
			Acid Extractable Vanadium (V)	2014/09/10		103	%	80 - 120
			Acid Extractable Zinc (Zn)	2014/09/10		103	%	80 - 120
			Acid Extractable Mercury (Hg)	2014/09/10		104	%	80 - 120
3741284	GBU	Method Blank	Acid Extractable Antimony (Sb)	2014/09/10	ND , RDL=0.20		ug/g	
			Acid Extractable Arsenic (As)	2014/09/10	ND , RDL=1.0		ug/g	

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Acid Extractable Barium (Ba)	2014/09/10	ND , RDL=0.50		ug/g	
			Acid Extractable Beryllium (Be)	2014/09/10	ND , RDL=0.20		ug/g	
			Acid Extractable Boron (B)	2014/09/10	ND , RDL=5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2014/09/10	ND , RDL=0.10		ug/g	
			Acid Extractable Chromium (Cr)	2014/09/10	ND , RDL=1.0		ug/g	
			Acid Extractable Cobalt (Co)	2014/09/10	ND , RDL=0.10		ug/g	
			Acid Extractable Copper (Cu)	2014/09/10	ND , RDL=0.50		ug/g	
			Acid Extractable Lead (Pb)	2014/09/10	ND , RDL=1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2014/09/10	ND , RDL=0.50		ug/g	
			Acid Extractable Nickel (Ni)	2014/09/10	ND , RDL=0.50		ug/g	
			Acid Extractable Selenium (Se)	2014/09/10	ND , RDL=0.50		ug/g	
			Acid Extractable Silver (Ag)	2014/09/10	ND , RDL=0.20		ug/g	
			Acid Extractable Thallium (Tl)	2014/09/10	ND , RDL=0.050		ug/g	
			Acid Extractable Uranium (U)	2014/09/10	ND , RDL=0.050		ug/g	
			Acid Extractable Vanadium (V)	2014/09/10	ND , RDL=5.0		ug/g	
			Acid Extractable Zinc (Zn)	2014/09/10	ND , RDL=5.0		ug/g	
			Acid Extractable Mercury (Hg)	2014/09/10	ND , RDL=0.050		ug/g	
3741284	GBU	RPD	Acid Extractable Antimony (Sb)	2014/09/10	NC		%	30
			Acid Extractable Arsenic (As)	2014/09/10	NC		%	30
			Acid Extractable Barium (Ba)	2014/09/10	0.51		%	30
			Acid Extractable Beryllium (Be)	2014/09/10	NC		%	30
			Acid Extractable Boron (B)	2014/09/10	NC		%	30
			Acid Extractable Cadmium (Cd)	2014/09/10	NC		%	30
			Acid Extractable Chromium (Cr)	2014/09/10	2.1		%	30
			Acid Extractable Cobalt (Co)	2014/09/10	2.0		%	30
			Acid Extractable Copper (Cu)	2014/09/10	3.4		%	30
			Acid Extractable Lead (Pb)	2014/09/10	1.4		%	30
			Acid Extractable Molybdenum (Mo)	2014/09/10	NC		%	30
			Acid Extractable Nickel (Ni)	2014/09/10	0.62		%	30
			Acid Extractable Selenium (Se)	2014/09/10	NC		%	30
			Acid Extractable Silver (Ag)	2014/09/10	NC		%	30
			Acid Extractable Thallium (Tl)	2014/09/10	NC		%	30
			Acid Extractable Uranium (U)	2014/09/10	1.5		%	30

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Acid Extractable Vanadium (V)	2014/09/10	1.0		%	30
			Acid Extractable Zinc (Zn)	2014/09/10	0.41		%	30

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.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B4G1500
Report Date: 2014/09/12

Biogenie Inc
Client Project #: FOX-3
Site Location: DEWER LAKE
Sampler Initials: MF

VALIDATION SIGNATURE PAGE

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

Brad Newman, Scientific Specialist

Steve Roberts, Lab Supervisor, Ottawa

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.

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

ANNEX 2 Discussion of the QA/QC

QUALITY ASSURANCE / QUALITY CONTROL

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 insure that sampling data and analysis results are complete, precise, exact, representative and comparable. The review consisted of evaluating sample collection/handling methodology, general laboratory comments, field (blind) duplicate samples, and inter-laboratory duplicate samples.

1. LABORATORIES

Samples collected during the monitoring program were submitted to laboratories accredited by the Canadian Association for Laboratory Accreditation (CALA):

- **Main Laboratory**
  Exova
  146 Colonnade Road #8
  Ottawa, Ontario
  K2E 7Y1
  CALA Registration number: 2602

- **Quality Assurance Laboratory**
  Maxxam Analytics International Corporation
  o/a Maxxam Analytics Campobello
  6740 Campobello Road
  L5N 2L8
  CALA Registration number: 2996

2. FIELD QA/QC

Standard sample collection techniques were implemented to decrease the likelihood of compromising collected samples, such as:

- Pre-cleaned sample containers were provided by the laboratory.
- Monitoring equipment was decontaminated between sampling stations and dedicated sampling systems were utilized.
- Soil samples were placed directly in the laboratory provided jars/bottles and were not mixed.
- Disposable nitrile glove were worn and disposed of after each sample collection.
- Jars/bottles were cleaned prior to placement into the cooler.
- Water samples were collected through the use of dedicated Waterra foot valves and tubing.

- Ice Packs or bagged ice (Ziplock bags) were used to ensure that sample temperature would be kept below 10℃ during transportation.
- Samples were kept at the laboratory at temperatures below 4℃.

A sample integrity form from Exova is provided in Annex 1. This document indicates that all samples received were acceptable for analysis.

The following is a summary of the analytical QA/QC procedure implemented in the field:

- 10% field Blind Duplicate Samples of soil and water were sent to Exova: four blind duplicate soil samples (F3-DUP-1, 4, 7, 10-2014) and one blind duplicate groundwater sample (F3-DUP-A-2014) were submitted, as an independent check on data reproducibility, and to assess the field QA/QC protocols.
- 10% Inter-laboratory Duplicate Samples were sent to Maxxam: four blind duplicate soil sample (F3-DUP-2, 5, 8, 11-2014) and one blind duplicate groundwater sample (F3-DUP-B, E-2014) were submitted (to determine if variation in procedures may cause significant difference in analytical results).
- 10% Archival Samples of soil were sent to ESG.

3. LABORATORIES QA/QC

Quality assurance documents from Exova only provide a summary of the QA/QC results. The quantity of samples per batch per analysis is not provided.
Quality assurance documents from Maxxam indicate that:

- The soil samples analyzed for metals, PCBs and PHCs were done in 1 single batch per parameter group:
    - Batch 3741284 for metals
    - Batch 3740733 for PCBs
    - Batch 3737266 for PHC fraction F1
    - Batch 3734927 for PHC fraction F2-F3
- As there was not enough water in the wells, only metal analysis (excluding mercury) was performed. The water samples analyzed was done in the following batches:
    - Batch 7629630 for most metals
        - Batch 7626950 for cadmium
        - Batch 3739875 for mercury

4. DATA MANAGEMENT AND INTERPRETATION

4.1. FIELD WORK

The relative percent difference (RPD) is used to evaluate the sample result variability. Average RPD values of 30% for each parameter analyzed from the same laboratory 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. These performance criteria are applicable when the concentrations of the original and duplicate sample are five times or greater than the laboratory method detection limit, since the uncertainty increases dramatically as the concentration approaches the detection limit. Table I provides the detection limit for each parameter and the associated minimum concentration to be reached in order to be eligible for RPD calculation.

Table I: Minimum Concentration for QA/QC RPD Calculation

		Soil			Water		
Parameter	**Laboratory**	**Units**	**MDL**	**RPD Minimum***	**Units**	**MDL**	**RPD Minimum***
As	Exova	mg/kg	1.0	5.0	mg/L	0.02000	0.10000
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00020	0.00100
Cd	Exova	mg/kg	0.50	2.5	mg/L	0.008000	0.04000
	Maxxam	mg/kg	0.10	0.5	mg/L	0.000020	0.00010
Cr	Exova	mg/kg	1.0	5.0	mg/L	0.050	0.250
	Maxxam	mg/kg	1.0	5.0	mg/L	0.001	0.005
Co	Exova	mg/kg	1.0	5.0	mg/L	0.0100	0.0500
	Maxxam	mg/kg	0.1	0.5	mg/L	0.0003	0.0015
Cu	Exova	mg/kg	1.0	5.0	mg/L	0.0100	0.0500
	Maxxam	mg/kg	0.5	2.5	mg/L	0.0002	0.0010
Pb	Exova	mg/kg	1.0	5.0	mg/L	0.0100	0.0500
	Maxxam	mg/kg	1.0	5.0	mg/L	0.0002	0.0010
Ni	Exova	mg/kg	1.0	5.0	mg/L	0.0100	0.0500
	Maxxam	mg/kg	0.5	2.5	mg/L	0.0005	0.0025
Zn	Exova	mg/kg	2	10	mg/L	0.040	0.200
	Maxxam	mg/kg	5	25	mg/L	0.003	0.015
Hg	Exova	mg/kg	0.10	0.50	mg/L	0.0001	0.0005
	Maxxam	mg/kg	0.05	0.25	mg/L	NA	NA
Total PCBs	Exova	mg/kg	0.02	0.10	ug/L	0.10	0.50
	Maxxam	mg/kg	0.01	0.05	ug/L	NA	NA
PHC F1	Exova	mg/kg	10	50	mg/L	0.02	0.10
	Maxxam	mg/kg	10	50	mg/L	NA	NA
PHC F2	Exova	mg/kg	10	50	mg/L	0.02	0.1
	Maxxam	mg/kg	10	50	mg/L	NA	NA
PHC F3	Exova	mg/kg	20	100	mg/L	0.05	0.25
	Maxxam	mg/kg	10	50	mg/L	NA	NA

* : The RPD Minimum is the minimum concentration to be reached for QA/QC Relative Percent Difference Calculation
NA: Not Available

4.1.1. SOIL SAMPLES

Four blind duplicate soil samples were submitted for intra- and inter-laboratory comparisons. The original and duplicate intra- and inter-laboratory metal, PCB and PHC soil sample results are summarized in Tables II along with the calculated RPD for each parameter. As noted in the tables, several of the results from the original and/or duplicate samples were below or within five times the laboratory method detection limits, and therefore RPD values were not calculated for these parameters.

Review of results indicated relatively minor differences in metal concentrations within the intra-laboratory duplicate samples, with only two samples with arsenic concentrations RPD values slightly above the acceptable range (35%).

Results from the inter-laboratory duplicate samples indicated minor concentration differences. In sample F3-DUP-5-2014, the calculated RPD for nickel and zinc was at 37 and 37.5%. For inter-laboratory comparisons, these results do not raise any concern.

4.1.2. WATER SAMPLES

One blind duplicate groundwater sample (F3-DUP-A-2014) was submitted for intra-laboratory and one duplicate was also sent for inter-laboratory comparisons (F2-DUP-B-2014). The original and duplicate intra- and inter-laboratory metal, PCB and PHC sample results are summarized in Table III, along with the calculated RPD for each parameter. As noted in the table, all calculated RPD values were within acceptable parameters.

4.2. LABORATORIES

QA/QC results from both laboratories do not raise any concern. QA/QC results from both laboratories are included with the certificates of analysis provided in Annexe 1.

4.2.1. BLANKS

All blanks from both laboratories, for both matrices and for all parameters were below the detection limits.

4.2.2. ANALYTICAL DUPLICATES

All analytical duplicates from both laboratories, for both matrices and for all parameters had RSD's at or below 20%.

4.2.3. CONTROL SAMPLES

All control samples from both laboratories, for both matrices and for all parameters had concentrations between the upper and lower concentration established for each parameter.

Table II: FOX-3 Soil Chemical Analysis Results - Quality Assurance Samples

Sample #	Laboratory	Parameters												
		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_6-C_{10} [mg/kg]	F2 C_{10}-C_{16} [mg/kg]	F3 C_{16}-C_{34} [mg/kg]
RDL - Exova		1.0	1.0	1.0	0.50	1.0	2	1	1	0.1	0.02	10	10	20
RPD Minimum - Exova		5.0	5.0	5.0	2.50	5.0	10	5	5	0.5	0.1	50	50	100
RDL - Maxxam		0.5	0.5	0.1	0.10	1.0	5	1	1	0.05	0.01	10	10	10
RPD Minimum - Maxxam		2.5	2.5	0.5	0.50	5.0	25	5	5	0.25	0.05	50	50	50
Intra-Lab Duplicate Samples														
F3-MW-4-S-A-2014	Exova	36.0	36.0	9.0	<0.5	7.0	65	87	29	<0.1	<0.02	<10	<10	<20
F3-DUP-1-2014	Exova	39.0	38.0	10.0	<0.1	7.0	71	89	28	<0.05	<0.01	<10	<10	<10
Relative % Difference		8.0	5.4	10.5	N/A	0.0	9	2.3	4	N/A	N/A	N/A	N/A	N/A
F3-5-A-2014	Exova	45.0	38.0	12.0	<0.5	9.0	97	82	14	<0.1	<0.02	<10	<10	<20
F3-DUP-10-2014	Exova	40.0	40.0	10.0	<0.1	7.0	75	97	20	<0.05	<0.01	<10	<10	<10
Relative % Difference		11.8	5.1	18.2	N/A	25.0	26	17	35	N/A	N/A	N/A	N/A	N/A
F3-8-A-2014	Exova	38.0	34.0	10.0	<0.5	7.0	78	87	14	<0.1	<0.02	<10	<10	<20
F3-DUP-7-2014	Exova	40.0	40.0	10.0	<0.1	7.0	75	97	20	<0.05	<0.01	<10	<10	<10
Relative % Difference		5.1	16.2	0.0	N/A	0.0	4	11	35	N/A	N/A	N/A	N/A	N/A
F3-MW-8-S-A-2014	Exova	40.0	38.0	10.0	<0.5	7.0	80	85	14	<0.1	<0.02	<10	<10	<20
F3-DUP-4-2014	Exova	36.0	33.0	8.0	<0.1	6.0	59	78	15	<0.05	<0.01	<10	<10	<10
Relative % Difference		10.5	14.1	22.2	N/A	15.4	30	9	7	N/A	N/A	N/A	N/A	N/A
Inter-Lab Duplicate Samples														
F3-MW-4-S-A-2014	Exova	36.0	36.0	9.0	<0.5	7.0	65	87	29	<0.1	<0.02	<10	<10	<20
F3-DUP-2-2014	Maxxam	39.0	38.0	10.0	<0.1	8.0	69	91	28	<0.05	<0.01	<10	<10	<10
Relative % Difference		8.0	5.4	10.5	N/A	13.3	6	4	4	N/A	N/A	N/A	N/A	N/A
F3-MW-8-S-A-2014	Exova	40.0	38.0	10.0	<0.5	7.0	80	85	14	<0.1	<0.02	<10	<10	<20
F3-DUP-5-2014	Maxxam	35.0	26.0	8.2	<0.1	7.0	55	63	18	<0.05	<0.01	<10	<10	<10
Relative % Difference		13.3	37.5	19.8	N/A	0.0	37	30	25	N/A	N/A	N/A	N/A	N/A
F3-8-A-2014	Exova	38.0	34.0	10.0	<0.5	7.0	78	87	14	<0.1	<0.02	<10	<10	<20
F3-DUP-8-2014	Maxxam	34.0	30.0	10.0	<0.1	7.0	69	78	14	<0.05	<0.01	<10	<10	<10
Relative % Difference		11.1	12.5	0.0	N/A	0.0	12	11	0	N/A	N/A	N/A	N/A	N/A
F3-5-A-2014	Exova	45.0	38.0	12.0	<0.5	9.0	97	82	14	<0.1	<0.02	<10	<10	<20
F3-DUP-11-2014	Maxxam	43.0	37.0	12.0	0.15	9.0	91	81	14	<0.05	<0.01	<10	<10	<10
Relative % Difference		4.5	2.7	0.0	N/A	0.0	6	1	0	N/A	N/A	N/A	N/A	N/A

Number exceeding the 30% RPD reference
Value for RPD minimum calculation

Table III: FOX-3 Groundwater Chemical Analysis Results - Quality Control Samples

Sample #	Laboratory	Parameters												
		Cu [mg/L]	Ni [mg/L]	Co [mg/L]	Cd [mg/L]	Pb [mg/L]	Zn [mg/L]	Cr [mg/L]	As [mg/L]	Hg [mg/L]	PCBs [ug/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{10}-C_{34} [mg/L]
		0.0100	0.0100	0.0100	0.00800	0.0100	0.040	0.050	0.0200	0.0001	0.10	0.02	0.02	0.05
RPD Minimum - Exova		0.0500	0.0500	0.0500	0.04000	0.0500	0.200	0.250	0.1000	0.0005	0.50	NA	0.1	0.3
RDL - Maxxam		0.0002	0.0005	0.0030	0.02000	0.0002	0.003	0.001	0.0002	0.0100	0.01	0.025	0.1	0.2
RPD Minimum - Maxxam		0.0010	0.0025	0.0150	0.10000	0.0010	0.015	0.005	0.0010	0.0500	0.05	0.125	0.5	1.0
Intra-Lab Duplicate Samples														
F3-MW-6-2014	Exova	0.1400	0.0900	<0.01	<0.008	0.0300	0.680	0.090	<0.02	<0.0001	Not enough water			
F3-DUP-A-2014		0.1300	0.1000	<0.01	<0.008	0.0300	0.680	0.130	<0.02	<0.0001	Not enough water			
Relative % Difference		7.4	10.5	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Inter-Lab Duplicate Samples														
F3-MW-6-2014	Exova	0.1400	0.0900	<0.01	<0.008	0.0300	0.680	0.090	<0.02	<0.0001	Not enough water			
F3-DUP-B-2014	Maxxam	0.1200	0.0690	0.01	0.00099	0.0250	0.730	0.060	0.0150	Not enough water				
Relative % Difference		15.4	26.4	N/A	N/A	N/A	7.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Number exceeding the 30% RPD reference

ANNEX 3 Field Notes and COC forms

fox-3 / Dewer Lake
2014-08-27 tier II disposal facility

- VT-1: height of protector
  AGS ≅ 1.05 m
  condition = good (vertical)
- gps pt 293 pics 513
  514
- serial # 111164
- data download = OK
- readings:

channel	volts
1	1.1657
2	1.0476
3	1.0360
4	1.0154
5	0.9775
6	0.9308
7	0.9005

channel	volt
8	-2.5479
9	0.8473
10	0.8210
11	0.8000
12	0.7817
13	0.7686
14	0.7560

- memory = 40%
- batteries = 11.34 V (main) best
  13.50 V (Aux) best

- change batteries - works good
- restart memory
- manual readings:

ch.	resist (kΩ)	ch.	resist
1	11.375	8	18.411
2	13.205	9	19.205
3	14.004	10	20.06
4	14.480	11	20.87
5	15.564	12	21.50
6	16.722	13	22.00
7	17.569	14	22.53

- lenght of cable AGS = 3.35m

VT-2: GPS pt 294
PICS 515-516

- serial # 111165
- protector height = 1.70 m AGS
- cable lenght AGS = 3.3m
- data download = OK
- Readings:

Ch.	Volts	ch	Volts
1	1.1764	6	0.9633
2	1.1603	7	0.9170
3	1.0627	8	-1.9916
4	1.0343	9	0.8592
5	1.0041	10	0.8315

- memory = 40%
- batteries = 11.34 V (main) best
  13.50 V (AUX) best
- replaced batteries (working good)

- manual readings:

ch	Resist (KΩ)	ch	Resist
1	11.309	6	15.730
2	11.352	7	17.084
3	13.272	8	17.806
4	14.086	9	18.36
5	14.750	10	19.80

J1-3: Cpsept 295
pics 517 - 519

- condition = good
- Serial # = 111163
- Protector height AGS = 1.10 m
- Cable bright AGS = 3.90 m
- data download = ok
- memory = 40%
- batteries = 11.34 V (main) best
  13.14 V (Aux) best

- readings:

ch.	Volts
1	1.2106
2	1.1940
3	1.1354
4	1.0268
5	1.0147
6	0.9742

ch	Volts
7	0.9241
8	-1.4999
9	0.8635
10	0.8396
11	0.8132

- changed batteries (works good)
- restarted memory
- manual readings

ch	resist (KΩ)
1	10,544
2	10,360
3	11,743
4	14,216
5	14,582
6	15,381

ch	resist
7	16,896
8	16,864
9	18,713
10	19,482
11	20,47

VT-41: GPS pt 296
pics 520-521

- Serial #111167
- Protector height AGS = 0.98 m
- Cable lenght AGS = 3.60 m
- condition good (unlocked)
- data download = ok
- memory = 40 %.
- batteries = 11.34 V (main) best
  13.50 V (Aux) best

- readings:

ch.	volts
1	1.2149
2	1.1622
3	1.0370
4	1.0243
5	0.9958
6	0.9462
7	0.910
8	-2.3179

ch	volts
9	0.8533
10	0.8249
11	0.8023
12	0.7776
13	0.7626
14	0.7479
15	0.7375

- charged batteries (good)
- restituted memory
- manual readings

ch	Resist (kΩ)	ch	Resist
1	9.810	9	18.958
2	10.897	10	19.981
3	13.860	11	20.75
4	14.257	12	21.69
5	14.705	13	22.79
6	16.240	14	22.82
7	17.262	15	23.38
8	18.187		

~~MW-01~~ MW-04 (mf. 2015-06-29) : GPS pt 297
pic 522 (NW 5°)

- height of detector top = 0.185 m (AGS)
- height of scan top AGS = 0.75 m

- total well depth BGS = 1.40m
- water table depth BGS = 0.15m
- water column = 1.25m
- initial parameters
  t°C = 2.87 ph = 6.68
  conductivity: 451 μS/cm
- signs of sludge/rust
- purge 1 volume of well
- final parameters
  t°C = 2.89 pH = 6.60
  conduct = 401 μS/cm
- Sampled F3-MW-4-2014 (MF 2015-06-29)

~~soil: Gps + 298~~
~~PGC 523~~

- reached 0.20m (Bedrock)
  Sampled ~~F3-MW-1-S-A-2014~~
  F3-MW-4-S-A-2014 (MF 2015-06-29)

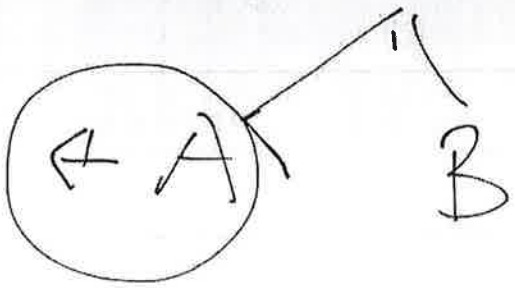
MW-01 (MF 2015-06-29)

~~MW-4~~: GPS pt 299
DIC 524 (N 180°)

- protector top height AGS = 0,75m
- screen top height AGS = 0,15cm
- total well depth BGS = 1,30m
- water table BGS = 0,37m
- water column = 0,93m
- signs of sludge / frost
- initial parameters:
  T°C = 13,65 pH = 6,60
  Conduct = 795 µS/cm
- purge 1 well volume
- final parameters:
  T°C = 2,65 pH = 6,40
  Conduct = 577 µS/cm
- sampled f3-~~MW-4-20~~ f3-MW-1-2014 (MF 2015-06-29)
- general well condition = good but unlocked + water into protector

Soil Samples: Gps pt 300
(N 125°) → pic 525 - 526
- reached 0.43 m depth
Sampled f3-MW-~~4~~-5-2014 1 (MF 2015-06-29)

F3-D up-1
f3-Dup-2
f3-Dup-3



MW-2 : Gps pt 302
pic 534 (N 45°)

- protector top height AGS = 1.00
- Screen top height AGS = 0.65
- total well depth BGS = 1.53m
- Water table depth BGS = 0.147m
- protector lifted by frost (+/- 1.4m)
- Initial parameters:
  - °C = 3.11 pH = 7.29
  - conductivity = 5020 µS/cm

very low recharge
- purge volume → final parameter
  temp = 2.94   pH = 7.12
  conductivity = 494 μS/cm
- sampled F3-MW-2-2014 (not complete)
- soil sampling GPS pt = 303
  pics 536-537
  → sampled F3-MW-4-S-(A/B) 2014
- general layout:
- GPS pt 299
  pics 527-528

- GPS pt 301
  pics 529-530-531

- MW-3: GPS pt 304
  pic 535 (N 170°)
- Protector top height AGS = 0.85 m
- Screen top height AGS = 0.81 m

- total well depth BGS = 1,31m
- water table BGS = 0,38m
- initial parameters
T°C = 2,99 pH = 6,76
conductivity = 508 µS/cm
- purge → final parameters
T°C = 2,91 pH = 6,58
conductivity = 470-7 µS/cm
- sampled F3-MW-3-2014
(not enough water for a complete sample)

Soil: GPS pt 505
PXS 532-533
reached 0.15m (rocks)
sampled F3-MW-3-S-A-2014

- general layout:
  - Gps pt 306
    pics 538 to 542
  - Gps pt 307
    pics 543 to 549
- feat 1: Feature 1H (MF 2015-01-06)
  pooling water
  Gps pt 308
  pic - 550 (N 125°)
  (0.75m x 1m +/-)
- Gps pt 309
  pics 551 to 553
  general layout

Station West Landfill 2014-08-27

F3-8-2014 (MF 2015-06-29)

- ~~f3-12-2014~~: GPS pt 323 pics 596 to 598 (N280°)

- Sampled

~~F3-12-A-2014~~ → F3-8-A-2014 (MF-2015-06-29) { Dup 7, Dup 8, Dup 9 }

F3-8-B-2014

~~F3-12-B-2014~~

Feature B (MF 2015-01-06)

- Feat 1: Staining (3x10 m)

GPS pt 324

Pic 599 (N100°)

F3-4-2014 (MF 2015-06-29)

- ~~f3-11~~: GPS pt 325

pic 600 (N270°)

- Sampled ~~F-3-11-2014~~ - A
- B

F3-4-2014 (MF 2015-06-29)

- feat 2: feature V (MF 2015-01-016) ponding water
  Gps pt 327 (5x4m)
  pic 601 (N180°)
- feat 3: feature U (MF 2015-01-016) drainage channel
  Gps pt 328 & 331
  pics 602 to 604 (N200°)
  (1.5m x 30m)
- feat ~~x~~ 4: feature A (MF 2015-01-016) lot A1 tanker
  (Gps pt 329-330)
  pic 605 (N130°)
- feat 4: feature C (MF 2015-01-016) exposed debris
  Gps pt 332
  pic 606 (N190°)

f3-5-2014 (MF 2015-06-29)

- ~~f3-10~~ : Gps pt 333
  pics 618 to 620 (N 110°)
  - sampled ~~f3-10-2014~~ f3-5-2014 (MF. 2015-06-29) (A, B)
    + Dups 10-11-12

- general layout picture
  - Gps pt 334
  - pics 607 to 616

- ~~feat 5~~ : feature W (MF 2015-01-06) ponding water (9 x 2m +/-)
  Gps pt 335
  pic 617 (N 145°)

- ~~f3-9~~ : f3-6-2014 (MF 2015-06-29) Gps pt 336
  pics 621 to 622 (N 110°)
  Sampled ~~f3-9-A-2014~~ F3-6-A-2014 (MF 2015-06-29)
  reached 0.2m (rocks)

- ~~f3-8~~ f3-7-2014 (MF 2015-06-29): GPS pt 337
pics 623-624 (N 60°)
- Sampled ~~F3-8-2014~~ F3-7-2014 (MF 2015-06-29) A, B

- ~~f3-7~~ f3-9-2014 (MF 2015-06-29): GPS pt 340
pic 628 (N 40°)
- Sampled ~~F3-7-2014~~ F3-9-2014 (MF 2015-06-29) A, B

- feat ~~6~~ feature S (MF 2015-01-06): debris exposed
GPS pt 338
pic 625

- feat ~~7~~ feature T (MF 2015-01-06): Ponding water (6x2m+/-)
GPS pt 339
pic 626 (N 160°)

- general layout (looking E?)
- GPS pt 341
- pics 629 to 637)

- general layout
  - Gps pt 342
  - pics 638 to 639

Lobe F -

- ~~F3-6-14~~ F3-12-2014 (MF 2015-06-29)
  Gps pt 343
  pic 640 (N 90°)
  - Sampled ~~F3-6-2014~~ F3-12-2014 (MF 2015-06-29) < A B

- General layout
  Gps pt 344
  pics 641 to 648
- ~~F3-5-14~~ F3-11-2014 (MF 2015-06-29)
  Gps pt 345
  pics 652-653 (N 25°)
  Sampled ~~F3-5-2014~~ F3-11-2014 (MF 2015-06-29) < A B

- ~~F3-4~~ F3-10-2014 (MF 2015-06-29):
  - Gps pt 347
  - pics 654 to 656
  - Sampled ~~F3-4-2014~~ F3-10-2014 (MF 2015-06-29) <A B
- General layout:
  - Gps pt 346. pic 649 (N 0°)
  - pic 651

Non-Hazardous waste L.F.

MW-7: Gps pt 310
pic 554 (N310°)

- height of protector top = 0.75m AGS
- Screen top height AGS = 0.63m
- condition = good (cap non standard)
- total well depth BGS = 1.20m
- water table BGS = 0.20m
- initial parameters:
  - T°C = 3.03 pH = 7.21
  - conduct. = 407 µS/cm
- purge
- final parameters
  - T°C = 2.90 pH = 7.11
  - conduct = 403 µS/cm
- Sampled for MW-7-2014
  very low recharge (not enough water in complete sample

Soil -> Gps pt 311
Pics 555 + 556 + 562
Sampled f3-MW-7-5 < A B

General layout:

- Gps pt 310
  pics 557 to 561

- MW-05: Gps pt 312
  pic 563 (N 160°)

- Protector top height AGS = 0,75
- Screen top height AGS = 0,66
- total well depth BGS = 1,30m
- wata table BGS = 0,20m

final (MF-2015-06-29)

- ~~initial~~ parameters:
  t° = 2.95 pH = 7.26
  conductivity = 642 µS/cm
- purge 1 volume of well
  very low recharge, lot of bentonite
- sampled F3-MW-5-2014
  (not enough water for a complete sample)

Soil sampling: GPS pt 313
pics 570 + 571
(N 170°)
Sampled F3-MW-5-S-2014 <A B

MW-06: GPS pt 315
pic 572 (N 185°)

- Protector height AGS = 0.88m
- screen top height AGS = 0.78m
- total well depth BGS = 1.33m

- General layout
  - GPS pt 314
    pids 564 to 569
  - ponding water on the road all around landfill

MW-6 (cont)
- water table depth BGS = 0,29 m
- ~~Initial~~ parameters
  T°C = 2,96 pH = 7,46
  Conductivity = 47 µS/cm
  Final (MP 2015-06-29)
- Purge (very low recharge)
- Sampled F3-MW-6-2014
  + Dup-A
  + Dup-B } metals
  + Dup-C } only

not enough water for complete samples

Soil Sampling: gps pt 816
pic 573 to 574 (N270°)
Sampled F3-MW-6-5-A/B 2014

MW-8: gps pt 317
pic 575 (N 55°)
- protector top height AGS = 0.74m
- Screen top AGS = 0.63m
- total well depth = 1.30m
- water table = 0.45m
- ~~initial~~ final (mf 2015-06-29) parameters
  t°C = 3.30 pH = 7.59
  conductivity = 513 µS/cm
- purge dry (low recharge)
- Sampled F3-MW-8-2014
  (not enough water for complete sample)

- general Condition: no sand and/or bentonite in protector (screen is free laterally)

- Soil sampling: Gps pt 318
  pic 576 (N 210°)
  - reached 0.40m (rocks) A
  - sampled F3-MW-B-S-2014
    + Dups 4-5-6 in "A" horizon B

General layout:

- Gps 319
  pics 577 to 580
- Gps pt 320
  pics 581 to 589
- Feat 1: ponding water (4m x 1.5) feature G (mf 2015-01-016)
  Gps pt 321
  pic 590 (N 170°)

- General layout
  Gps pt 322
  pics 591 to 595

WOST Landfill

2014-08-27

- F3-1-2014: GPS pt 348
  pics 657 + 666
  (N85°)
  - Sampled F3-1-A-2014
    reached only 0.20m (rocks)
- General overview
  GPS pt 349
  pics 658 to 665
- ~~F3-2-2014~~ F3-3-2014 (MF 2015-06-29)
  GPS pt 350
  pics 667 + 669
  Sampled ~~F3-2-A-2014~~ F3-3-A-2014 (MF 2015-06-29)
  reached only 0.22m (rocks)
- feat 1: Settlements (3x 1.5m) feature E (MF 2015-01-06)
  GPS pt 351
  pic 668 (N220°)

F3-3-2014 → F3-2-2014 (MF 2015-06-29)

F3-3-2014 : Gps pt 352

pics 670 + (N210°)

sample only F3-3-A-2014 → F3-2-A-2014 (MF 2015-06-29) (Rocks)

feat 3 → Feature F (MF 2015-01-06) : Settlement (3x2.5m +/-)

Gps pt 353

pic 671 (N)

- general overview
  - Gps pt 354
    pic 672 (N195°)
  - Gps pt 355
    pic 673 (N40°)
    pic 674 (N130°)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

DEMAND D'ANALYSE

Numéro Demande : (Interne)

Nom du Client: Sila Remediation	
Adresse (Certificat): PO BOX 37	Adresse (Facturation, si différente): 100-4495, boul. Wilfrid-Hamel
Ville: Igloolik (NU) — Code postal: X0A-0L0	Ville: Québec (QC) — Code postal: G1P 2J7
Téléphone: 418-653-4422 — Télécopieur: 418-653-3583	Téléphone: 450-961-3535 — Télécopieur: 418-647-7540
Courriel: martin.fleury@lvm.ca	Courriel: jean-pierre.pelletier@lvm.ca
Lot ou Description du projet: Dew Line Monitoring	Chargé de projet: Jean-Pierre Pelletier
Bon de commande: Dewar Lake	Numéro de soumission:
Lieu d'échantillonnage: FOX-3 – ~~Longstaff Bluff~~	Échantillonneur: Martin Fleury
Spécifications requises (au besoin):	Certificat d'analyse: ☐ Français ☒ Anglais ☑ Fax ☒ Courriel (pdf)

	Votre Référence Échantillon (Cuf 2015-06-29)	Date & Heure d'échantillonnage	PCBs-Total Aroclo	TPH (F1-F3)	metals *	Nature (voir code)	Nbr Contenants	T [°C] - interne
1.	F3-1-A-2014	2014-08-27	X	X	X	S	2	
2.	F3-1-B 2014		X	X	X			
3.	~~F3-2-A-2014~~ → F3-3-A-2014		X	X	X			
4.	~~F3-2-B 2014~~		X	X	X			
5.	~~F3-3-A-2014~~ → F3-2-A-2014		X	X	X			
6.	~~F3-3-B-2014~~		X	X	X			
7.	~~F3-4-A-2014~~ → F3-10-A-2014		X	X	X			
8.	~~F3-4-B-2014~~ → F3-10-B-2014		X	X	X			

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : * As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Martin Fleury
Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

délais normaux
Date à laquelle les résultats sont requis

[✓] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse (1 de 8)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

Numéro Demande : (Interne)

DEMAND D'ANALYSE

Nom du Client: Sila Remediation	
Adresse (Certificat)	Adresse (Facturation, si différente)
Villie / Code postal	Ville / Code postal
Téléphone / Télécopieur	Téléphone / Télécopieur
Courriel	Courriel
Lot ou Description du projet :	Chargé de projet :
Bon de commande :	Numéro de soumission :
Lieu d'échantillonnage : Fox-3 _ Dewar Lake	Échantillonneur :
Spécifications requises (au besoin) :	Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)

(MF 2015-06-29)

Votre Référence Échantillon	Date & Heure d'échantillonnage	PCBs	TPH(F1-F3)	metals*	Nature (voir code)	Nbr Contenants	T [°C] - interne
1. ~~F3-5-A-2014~~ → F3-11-A-2014	2014-08-27	X	X	X	S	2	
2. ~~F3-5-B-2014~~ → F3-11-B-2014		X	X	X			
3. ~~F3-6-A-2014~~ → F3-12-A-2014		X	X	X			
4. ~~F3-6-B-2014~~ → F3-12-B-2014		X	X	X			
5. ~~F3-7-A-2014~~ → F3-9-A-2014		X	X	X			
6. ~~F3-7-B-2014~~ → F3-9-B-2014		X	X	X			
7. ~~F3-8-A-2014~~ → F3-7-A-2014		X	X	X			
8. ~~F3-8-B-2014~~ → F3-7-B-2014		X	X	X			

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : *As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[✓] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse (2 de 8)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

DEMAND D'ANALYSE

Numéro Demande :
(Interne)

Nom du Client	Sila Remediation
Adresse (Certificat)	Adresse (Facturation, si différente)
Ville / Code postal	Ville / Code postal
Téléphone / Télécopieur	Téléphone / Télécopieur
Courriel	Courriel
Lot ou Description du projet :	Chargé de projet :
Bon de commande :	Numéro de soumission :
Lieu d'échantillonnage : FOX-3	Échantillonneur :
Spécifications requises (au besoin) :	Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)

	Votre Référence Échantillon	Date & Heure d'échantillonnage	Paramètres demandés (√)			Nature (voir code)	Nbr Contenants	T [°C] - interne
			BPC	TPH (C6-C50)	métaux			
1.	~~F3-9-A-2014~~ → F3-6-A-2014 (MF 2015-06-29)	2014-08-27	X	X	X	S	2	
2.	~~F3-9-B-2014~~		X	X	X	↓	↓	
3.	~~F3-10-A-2014~~ → F3-5-A-2014		X	X	X			
4.	~~F3-10-B-2014~~ → F3-5-B-2014		X	X	X			
5.	~~F3-11-A-2014~~ → F3-4-A-2014		X	X	X			
6.	~~F3-11-B-2014~~ → F3-4-B-2014		X	X	X			
7.	~~F3-12-A-2014~~ → F3-8-A-2014		X	X	X			
8.	~~F3-12-B-2014~~ → F3-8-B-2014		X	X	X			

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques :

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[4] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse (3 de 8)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

DEMAND D'ANALYSE

Numéro Demande : (Interne)

Nom du Client: Sila Remediation	
Adresse (Certificat)	Adresse (Facturation, si différente)
Ville / Code postal	Ville / Code postal
Téléphone / Télécopieur	Téléphone / Télécopieur
Courriel	Courriel
Lot ou Description du projet :	Chargé de projet :
Bon de commande :	Numéro de soumission :
Lieu d'échantillonnage : fox-3	Échantillonneur :
Spécifications requises (au besoin) :	Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)

F3-MW-4-S-A-2014 CHF 2015-06-29)

	Votre Référence Échantillon	Date & Heure d'échantillonnage	PCB's	TPH(F1-F3)	metals*	Nature (voir code)	Nbr Contenants	T [°C] - interne
1.	~~F3-MW-1-S-A-2014~~ → F3-MW-4-S-A-2014	2014-08-27	X	X	X	S	2	
2.	~~F3-MW-1-S-B-2014~~	~~|~~	~~X~~	~~X~~	~~X~~	~~|~~	~~|~~	
3.	F3-MW-2-S-A-2014	|	X	X	X	|	|	
4.	F3-MW-2-S-B-2014	|	X	X	X	|	|	
5.	F3-MW-3-S-A-2014	|	X	X	X	|	|	
6.	~~F3-MW-3-S-B-2014~~	~~|~~	~~X~~	~~X~~	~~X~~	~~|~~	~~|~~	
7.	~~F3-MW-4-S-A-2014~~ F3-MW-1-S-A-2014		X	X	X	|	|	
8.	~~F3-MW-4-S-B-2014~~ F3-MW-1-S-B-2014		X	X	X	↓	↓	

Paramètres demandés (√)

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : *As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[✓] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse (4 de 8)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

Numéro Demande :
(Interne)

DEMAND D'ANALYSE

Nom du Client	Stantec Remediation
Adresse (Certificat)	Adresse (Facturation, si différente)
Ville / Code postal	Ville / Code postal
Téléphone / Télécopieur	Téléphone / Télécopieur
Courriel	Courriel
Lot ou Description du projet :	Chargé de projet :
Bon de commande :	Numéro de soumission :
Lieu d'échantillonnage : Fox-3	Échantillonneur :
Spécifications requises (au besoin) :	Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)

	Votre Référence Échantillon	Date & Heure d'échantillonnage	Paramètres demandés (√)			Nature (voir code)	Nbr Contenants	T [°C] - interne
			RBS	TPH (C-F2)	Métaux *			
1.	F3-MW-5-S-A-2014	2014-08-27	X	X	X	S	2	
2.	F3-MW-5-S-B-2014	"	X	X	X	"	"	
3.	F3-MW-6-S-A-2014	"	X	X	X	"	"	
4.	F3-MW-6-S-B-2014	"	X	X	X	"	"	
5.	F3-MW-7-S-A-2014	"	X	X	X	"	"	
6.	F3-MW-7-S-B-2014	"	X	X	X	"	"	
7.	F3-MW-8-S-A-2014	"	X	X	X	"	"	
8.	F3-MW-8-S-B-2014	"	X	X	X	"	"	

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : * As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[ ] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

Numéro Demande :
(Interne)

DEMAND D'ANALYSE

Nom du Client: Sila Remediation			
Adresse (Certificat)		Adresse (Facturation, si différente)	
Ville	Code postal	Ville	Code postal
Téléphone	Télécopieur	Téléphone	Télécopieur
Courriel		Courriel	
Lot ou Description du projet :		Chargé de projet :	
Bon de commande :		Numéro de soumission :	
Lieu d'échantillonnage : FOX-3		Échantillonneur :	
Spécifications requises (au besoin) :		Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)	

Votre Référence Échantillon	Date & Heure d'échantillonnage	Paramètres demandés (√)																				Nature (voir code)	Nbr Contenants	T [°C] - interne
		PCB's	TPHCG-F3	metals #																				
1. F3-Dup-1-2014	2014-08-27	X	X	X																		S	2	
2. F3-Dup-4-2014	"	X	X	X																		"	"	
3. F3-Dup-7-2014	"	X	X	X																		"	"	
4. F3-Dup-10-2014	"	X	X	X																		"	"	
5.																								
6.																								
7.																								
8.																								

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : * As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[✓] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse

(1 de 2)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

DEMAND D'ANALYSE

Numéro Demande :
(Interne)

Nom du Client : Sila Remediation	
Adresse (Certificat)	Adresse (Facturation, si différente)
Ville / Code postal	Ville / Code postal
Téléphone / Télécopieur	Téléphone / Télécopieur
Courriel	Courriel
Lot ou Description du projet :	Chargé de projet :
Bon de commande :	Numéro de soumission :
Lieu d'échantillonnage : Fox-3	Échantillonneur :
Spécifications requises (au besoin) :	Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)

	Votre Référence Échantillon	Date & Heure d'échantillonnage	Paramètres demandés (√)			Nature (voir code)	Nbr Contenants	T [°C] - interne
			PCBs	+PH (Cu-Pb)	Métaux *			
1.	~~F3-MW-1-2014~~ (MF 2015-06-29) → F3-MW-4-2014	2014-08-27	X	X	X	ES	3	2
2.	F3-MW-2-2014	"	X	X	X	"	3	2
3.	F3-MW-3-2014	"	X	X	X	"	3	2
4.	~~F3-MW-4-2014~~ → F3-MW-1-2014	"	X	X	X	"	3	2
5.	F3-MW-5-2014	"	X	X	X	"	3	2
6.	F3-MW-6-2014	"	X	X	X	"	3	2
7.	F3-MW-7-2014	"	X	X	X	"	3	2
8.	F3-MW-8-2014	"	X	X	X	"	3	2

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : * As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[✓] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse (7 de 8)

Exova
237 rue de Liverpool
St-Augustin-de-Desmaures
Québec
Canada
G3A 2C8

Sans Frais: +1 (866) 365-2310
T: +1 (418) 878-4927
F: +1 (418) 878-7185
C: ventes@exova.com
www.exova.ca

Exova

DEMAND D'ANALYSE

Numéro Demande : (Interne)

Nom du Client	Sila Remediation
Adresse (Certificat)	Adresse (Facturation, si différente)
Ville / Code postal	Ville / Code postal
Téléphone / Télécopieur	Téléphone / Télécopieur
Courriel	Courriel
Lot ou Description du projet :	Chargé de projet :
Bon de commande :	Numéro de soumission :
Lieu d'échantillonnage : Fox-3	Échantillonneur :
Spécifications requises (au besoin) :	Certificat d'analyse : ☐ Français ☐ Anglais ☐ Fax ☐ Courriel (pdf)

Votre Référence Échantillon	Date & Heure d'échantillonnage	Paramètres demandés (√)																						Nature (voir code)	*Nbr Contenants*	T [°C] - interne
		PCB's	Métaux *	HAP (Co-134)																						
1. F3-Dup-A-2014	2014-05-27	X	X	X																				ES		
2.																										
3.																										
4.																										
5.																										
6.																										
7.																										
8.																										

Code de natures : E: Eau / EP: Eau potable / ES: Eau souterraine / EA: Eau de surface / EB: Eau de baignade / EU: Eau usée / EM: Eau mine
A: Air / AL: Aliment / LX: Lixiviat / S: Sol / SE: Sédiment / B: Boue / H: Huile / F: Frottis / EC: Écouvillon / PH: Produit pharmaceutique / Z: Autre (définir)

Remarques : * As, Cd, Cr, Co, Cu, Pb, Ni, Zn, Hg

Signature du client
J'autorise le laboratoire à effectuer les analyses spécifiées sur cette Demande d'analyse

Date à laquelle les résultats sont requis

[ ] Cocher si d'autres pages sont jointes pour la présente Demande d'analyse

Maxxam Analytics Inc

49-55 Elizabeth Avenue, Suite 101A, St. John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

23244

3-Sep-14 13:10
Parnian Baber
B4G1500
KP2 OTT-002

INVOICE INFORMATION:
Company Name: Sila Remediation
Contact Name: Guillaume Robert
Address: PO Box 37
Igloolik, NU X0A0L0
Email:
Ph: 418-653-4411 Fax: 418-653-3583

REPORT INFORMATION (if differs from invoice):
Company Name: Sila Remediation
Contact Name: Jean-Pierre Pelletier
Address: 100-4495 Bullfrid-Hamel
boul., Quebec (QC) GIP 2J7
Email: jean-pierre.pelletier@ulaval.ca
Ph: 418-6226-2054 Fax: 418-647-2540

PO #:
Project #:
Proj. Name: Fox-3
Location: Dewer Lake
Quotation#:
Submitted By: MARTIN FILBURY
Site Task #:
Client Code:

Specify Guideline Requirements:

*Specify Matrix: Surface/Salt/Ground/Tapwater/Sewage/Effluent/Seawater Potable/NonPotable/Tissue/Soil/Sludge/Metal

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury is not included in soil or water metals scan	Metals Soil: Mercury	Available Metals Digest Default Method (HNO3/H2O)	Total Digest - for sediments (HNO3-HF/HClO4)	Tin (required for CCME soils)	Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Hot Water soluble Boron (required for CCME Agricultural)	TPH MUST (BTEX, C6-C34)	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C6-C50	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation (F1-F2)	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
F3-Dup-2-2014	S	2014-08-27	1							X										X		X		As,Cd,Cr,Co,Cu,Pb,Ni,Zn
F3-Dup-5-2014	S	↓	2							X										X		X		↓
F3-Dup-8-2014	S		2							X										X		X		
F3-Dup-11-2014	S		2							X										X		X		
F3-Dup-B-2014	G.water	2014-08-27	1							X							X					X		↓
																								on ice packs
																								REC'D IN OTTAWA
																								cust body seal present

RELINQUISHED BY: (Signature/Print)	RECEIVED BY: (Signature/Print)	DATE / TIME	PURPOSE OF CHANGE / REMARKS
	Kelsey Pilon Kelsey Pilon	2014/09/03 13:10	6,7,7 5,7,5

DUE DATE:
STANDARD: ☒
RUSH Due Date: _____
For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.
Client will be contacted if Rush date cannot be met.

TEMP @ Maxxam Receipt: 5, 5, 5 6,7,6 7,8,7

INTEGRITY Init: ____ Yes No

KEEN/ROCOC St.John's 05/05

(1 de 1)

ANNEX 4 Range of the Report and Limitation of Responsibilities

SCOPE OF THE REPORT AND LIMITATION OF LIABILITY

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.