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

Shepherd Bay, Nunavut

REVISED FINAL REPORT - 2014
(O/Ref.: CD2656)
(Y/Ref.: DLCLFMP2 (KITIK12))

DEFENCE CONSTRUCTION CANADA

APRIL 2015

Biogénie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel Blvd., Suite 200
Quebec (Quebec) G1P 2J7
CANADA

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

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

Shepherd Bay, Nunavut

REVISED FINAL REPORT - 2014
(O/Ref.: CD2656) (Y/Ref.: DLCLFMP2 (KITIK12))

DEFENCE CONSTRUCTION CANADA

APRIL 2015

Presented to: Nahed Farah
Defence Construction Canada

Written by:
Andrew Passalis, P.Eng.
Project Manager

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

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

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

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, PIN-3 Lady Franklin Point, CAM-M Cambridge Bay, CAM-2 Gladman Point, CAM-3 Shepherd Bay, CAM-4 Pelly Bay, DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION, DCC PROJECT #: DLCLFMP2 (KITIK12)*, March 20, 2012.*"*. This report contains a summary of the findings from the 2014 inspection of the CAM-3 Shepherd Bay site.

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 CAM-3 Landfills

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Beach Landfill	✓	✓		
Non-Hazardous Waste Landfill	✓	✓	✓	
Station Landfill	✓	✓		
Tier II Disposal Facility	✓	✓	✓	✓
Northeast Landfill	✓	✓		
USAF Landfill	✓	✓	✓	✓
NWS Landfill	✓	✓		

1.2 FIELD PROGRAM STAFF AND TIMING

The 2014 on-site field program at CAM-3 Shepherd Bay took place from August 22 to August 24, 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. Andrew Passalis with the assistance of four local representatives, whose names and responsibilities are detailed below:

- Mr. Andrew Passalis, Project Engineer (Sila)
- John Henry Etegak, Field Technician (Sila)
- Benjamin Kaniak, Field Technician (Sila)
- Dyson Koaha, Field Technician (Sila)
- Joe Koaha, Wildlife Monitor (Sila)

1.3 2014 WEATHER CONDITIONS

Seasonally cool weather conditions were observed during the CAM-3 Shepherd Bay monitoring event with daytime temperatures ranging between 3-4ºC in the morning and warming up to daytime highs of 6-8ºC for the duration of the monitoring period (August 22-24). Skies were generally overcast to mostly cloudy throughout the entire monitoring event, with brief periods of fog and light rain observed the morning of August 23rd. Winds generally ranged between 20-30 km/hr from the northwest during the initial two days decreased to between 5-10 km/hr from the southwest on the final day of monitoring.

1.4 REPORT FORMAT

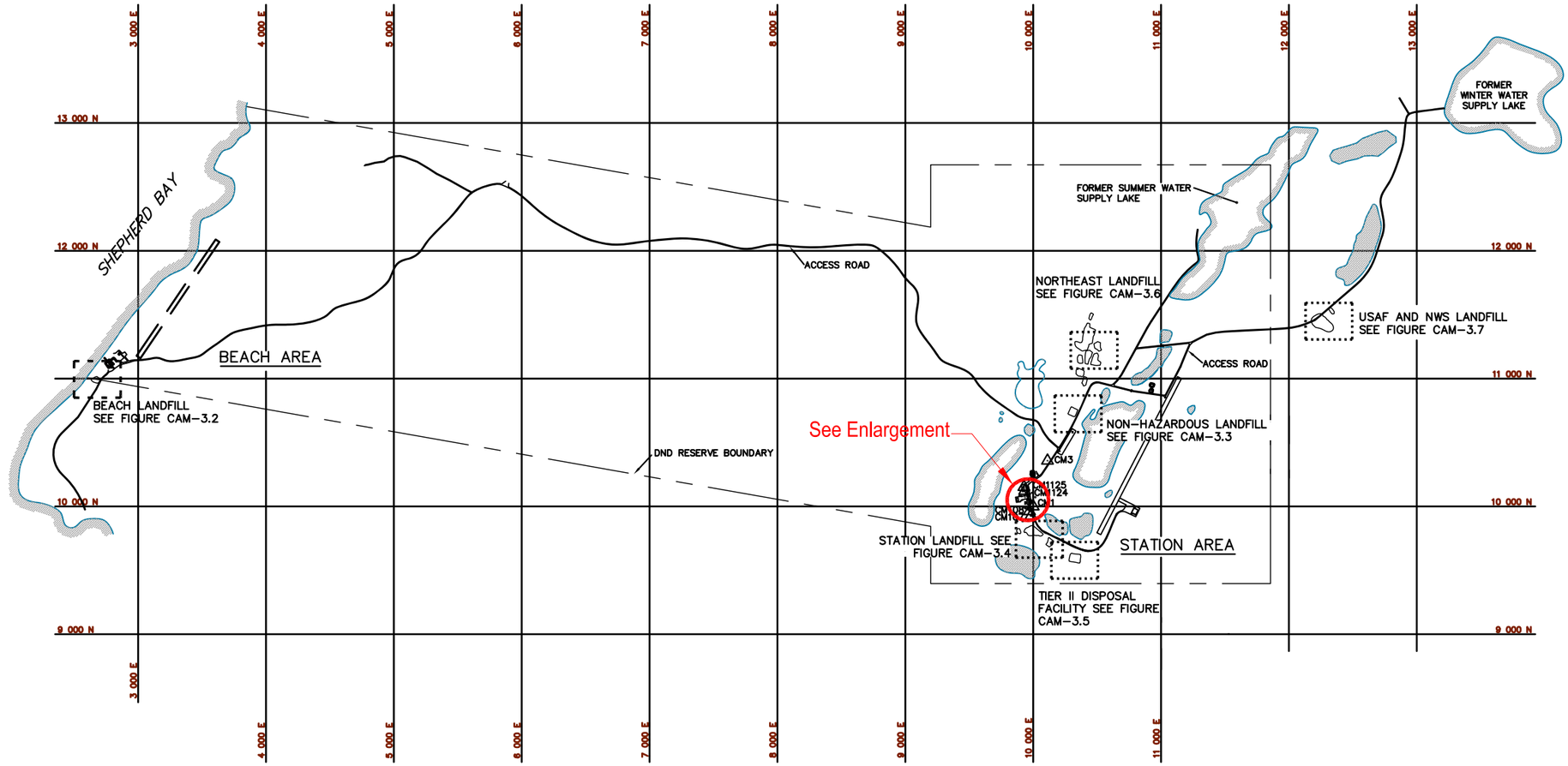
This report describes the work carried out in August 2014, at the seven landfill sites at CAM-3 Shepherd Bay. Results from soil and groundwater sampling, thermal monitoring, and visual inspection of the sites are also presented in the formats described in the TOR (Reference A). An electronic version of the report and its associated tables, figures, and data files are included in an Addendum DVD-ROM, which is appended to this report.

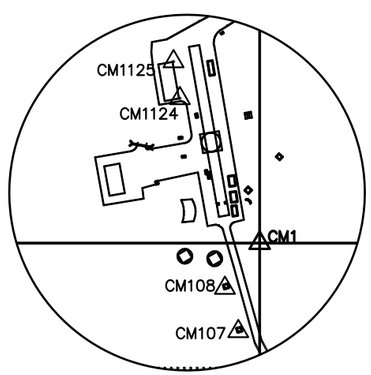
The report is organized with a separate section for each of the landfill areas. Each section contains all relevant information for that landfill area, for the 2014 Landfill Monitoring Program. The following information is provided in each landfill section:

- 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 Addendum 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.

SURVEY CONTROL MONUMENTS (LOCAL COORDINATES)				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
CM1	10 000.000	10 000.000	41.775	CAM–3 BASELINE
CM3	10 357.750	10 111.994	41.450	GSC MON. 749725
CM107	9 926.007	9 982.062	43.107	DMA MON. 11811
CM108	9 962.344	9 970.897	42.690	DMA RM. 11811
CM1124	10 121.226	9 933.143	43.418	TECSULT
CM1125	10 152.084	9 927.809	43.406	TECSULT





Enlargement
Scale 1 = 5,000

LEGEND

CM1 △ SURVEY CONTROL MONUMENT

0 400m 800m 1200m 1600m 2000m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15–04–27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, 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 : 40,000	APRIL 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. ENG
PROJECT NO:	DRAWING NO:	PAGE
CD2656_004_160	CD2656_004_160_101-CAM-3_1	LS

FIGURE CAM-3.1

2 METHODOLOGY

2.1 VISUAL INSPECTION

Data and information collected during the visual inspection of the CAM-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 or numerical tag to be used consistently each year in an effort to track changes in conditions for each specific feature.

Digital photos 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 a Sony DSC-TX5 10.2 megapixel (MP) digital camera. 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 glove were worn and disposed of after each sample collection. Jars/bottles were cleaned prior to placement into the cooler. For the 2014 monitoring event, 32 soil sampling stations were visited. A surface sample (0-15 cm depth) and subsurface sample (40-50 cm depth below surface) were taken at each sampling station. Bedrock, frozen ground or frost was not encountered at any of the soil stations during the August 2014 sampling.

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.
- Blind field duplicates (10%) were collected for quality assurance and quality control purposes.
- Duplicate samples (10%) were also taken and sent to a second laboratory for quality control purposes.
- An additional 10% of soil samples taken were sent to the owner's representative (ESG OPS CENTRE) in Kingston for archiving as specified by DCC.

The soil samples were analyzed for requested parameters (TPH [F1-F3], total metals and PCBs) as specified by DCC. It should be noted that:

- Exova performed Total PCBs analysis with a method detection limit of 0.1 mg/kg, whereas the contractual requirement is 0.05 mg/kg. Given that the DLCU Tier I Criteria for Total PCBs is 1 mg/kg, the results provided by Exova are still valid.

Table II below summarizes the soil sampling at CAM-3 during the August 2014 field program.

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

Landfill Site	Soil Sample Locations				
Beach Landfill	C3-1	C3-2	C3-3		
Non-Hazardous Waste Landfill	MW-1	MW-2	MW-3		
Station Landfill	C3-4	C3-5	C3-6	C3-7	C3-8
Tier II Disposal Facility	MW-4	MW-5	MW-6	MW-7	
Northeast Landfill	C3-9	C3-10	C3-11	C3-12	C3-13
	C3-14	C3-15	C3-16	C3-17	C3-18
USAF Landfill	MW-12	MW-13	MW-14	MW-15	
NWS Landfill	C3-19	C3-20	C3-21		

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 2014 field program included sampling 5 of the 11 monitoring wells at the CAM-3 site. All of the wells at the Non-Hazardous Waste Landfill (3) and one of the wells at the Tier II

Disposal Facility and USAF Landfill were dry at the time of monitoring. In addition, MW-6 located at the Tier II Disposal Facility contained an insufficient volume of water at the time of monitoring and consequently could not be sampled. A summary of the groundwater sampling undertaken at CAM-3 is summarized 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. It should be noted that, although requested in the Chains of Custody, Exova did not perform the mercury analysis on groundwater samples.

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

Landfill Site	Groundwater Sample Locations			
NHLWF	MW-1 (dry)	MW-2 (dry)	MW-3 (dry)	
Tier II Disposal Facility	MW-4 (dry)	MW-5	MW-6 (insufficient water)	MW-7
USAF Landfill	MW-12 (dry)	MW-13	MW-14	MW-15

2.4 THERMAL MONITORING

The 2014 thermal monitoring program at CAM-3 consisted of an inspection of eight thermistors and data loggers, the downloading of all datasets, the manual reading of thermistors and the replacement of batteries at all datalogger locations. Specific detailed information regarding temperature data is contained in the Tier II Disposal Facility and USAF Landfill sections of this report.

2.5 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 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 (via Yellowknife) and Exova in Edmonton and ESG, via Ottawa to Kingston, Ontario (via Iqaluit), where they were checked in by laboratory representatives. All analyses were completed as specified on COC forms.

Annex 1 provides a sample integrity report from Exova. This report indicates that all samples received were acceptable for analysis.

2.6 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 Blind Duplicate Samples of soil and water were sent to Exova. Results can be found in Annex 1.
- 10% Inter-laboratory Duplicate Samples were sent to Maxxam (to determine if variation in procedures may cause significant difference in analytical results).
- 10% Archival Samples of soil were sent to ESG.

2.7 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: PIN-3 Lady Franklin Point, CAM-M Cambridge Bay, CAM-2 Gladman Point, CAM-3 Shepherd Bay, CAM-4 Pelly Bay, DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION, DCC PROJECT #: DLCLFMP2 (KITIK12)*,

B. T*erms of Reference – Consulting Services for the Collection of Landfill Monitoring Data – PIN-3 Lady Franklin Point, CAM-M Cambridge Bay, CAM-2 Gladman Point, CAM-3 Shepherd Bay, CAM-4 Pelly Bay, DEW LINE SITES, NUNAVUT TERRITORY, KITIKMEOT REGION, DCC PROJECT #: DLCLFMP2 (KITIK12)*, March 20, 2012.

C. Technical Proposal – The Collection of Landfill Monitoring Data for the DEW Line Sites: *PIN-3 Lady Franklin Point, CAM-M Cambridge Bay, CAM-2 Gladman Point, CAM-3 Shepherd Bay, CAM-4 Pelly Bay, DEW LINE SITES, NUNAVUT, KITIKMEOT REGION,* June 2012.

D. Post-Field Progress Report, CAM-3 Landfill Monitoring 2014, October 2014*.*

3 BEACH LANDFILL

3.1 SUMMARY

On August 23, 2014 soil sampling and a visual inspection were completed at the Beach Landfill.

TPH, 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 Beach Landfill. No exposed debris is present at the lobes. A number of minor settlement and erosional features, consistent with observations from the previous inspection period, were noted during the 2014 investigation.

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

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table IV of this report.

Table IV: Visual Inspection Checklist / Report – Beach Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST

INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: Beach Landfill (Regrade Landfill)
DATE OF INSPECTION: August 23, 2014
DATE OF PREVIOUS INSPECTION: August 21, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 6
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: BEACH LANDFILL LANDFILL VISUAL INSPECTION (PAGE 2 OF 2)

Site Name: Cam-3 Shepherd BAY
Landfill: Beach Landfill
Designation: Regrade Landfill
Date Inspected: August 23, 2014
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.
Signature:

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.2 (W and S sides)	0.6 - 9 m	0.2 - 7 m	0.03 - 0.1 m	Occasional	Six small and one medium sized depression on cover and side slopes	BLF-12, 13, 27-29	Acceptable	Subtle depressions on landfill surface. No significant change from previous observation.
		FEATURE B See Figure CAM-3.2 (S cover and SE side slope)	0.3 - 4 m	0.3 - 0.5 m	0.05 - 0.1 m	Occasional		BLF-5, 9, 10		
Erosion	Yes	FEATURE C See Figure CAM-3.2 (SE cover/side slope)	15 m	0.2 m	0.02 - 0.05 m	Isolated	Minor surface erosion	BLF- 30, 31	Acceptable	Erosion and subtle depression likely due to washing of fines. Self armouring. No significant change from previous observation.
		FEATURE D See Figure CAM-3.2 (SW slope)	2.5 m	0.3 m	0.02 - 0.03 m	Isolated	Minor surface erosion	BLF- 19, 20	Acceptable	Erosion resulting in washing of fines. Self armouring. Some previously noted features not visible. No significant change from previous observation.
Frost Action	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Animal Burrows	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Vegetation	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Staining	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Vegetation Stress	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Seepage Points	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Debris Exposed	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	None
Other Features of Note:	Yes	See Figure CAM-3.2 N and S sides	N/A	N/A	N/A	None	Shallow drainage features	BLF-3, 7, 14, 24, 25	N/A	Surface runoff directed around landfill. Not in contact with landfill.
Additional Photos	Yes	See Figure CAM-3.2 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

3.2 PRELIMINARY STABILITY ASSESSMENT

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

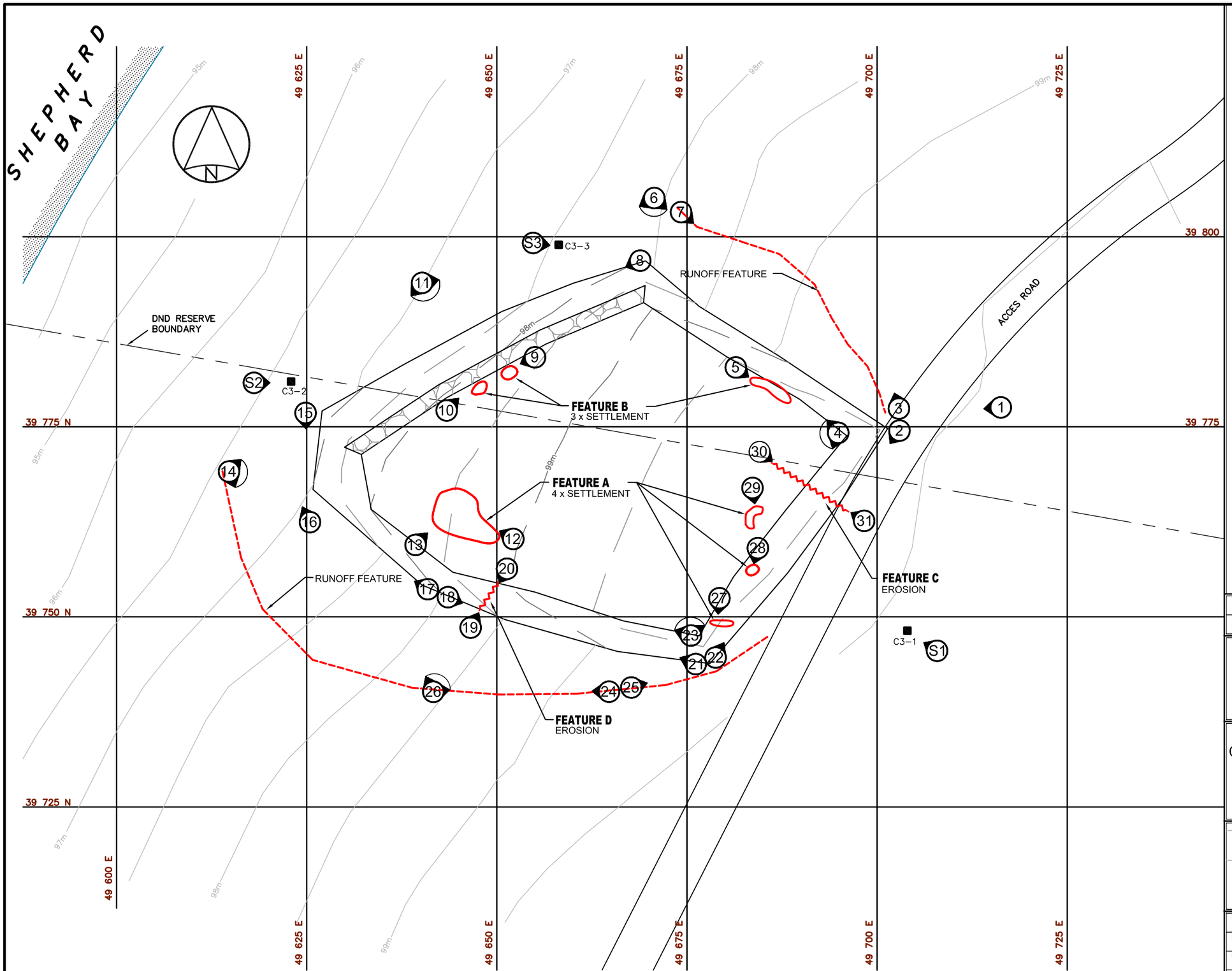
Table V: Preliminary Stability Assessment – Beach Landfill

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

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

3.3 LOCATION PLAN

The Location Plan for the Beach Landfill has been completed as per the TOR and is presented in Figure CAM-3.2.



LEGEND

- PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- EROSION (NTS)
- MONITORING SOIL SAMPLE LOCATION

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15-04-27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

BEACH 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 : 500	APRIL 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. ENG
PROJECT NO: CD2656_004_160	DRAWING NO: CD2656_004_160_101-CAM-3_2	PAGE PL

FIGURE CAM-3.2

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_2.dwg, PL, 2015-04-27 8:44:18 AM

3.4 PHOTOGRAPHIC RECORDS

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

Table VI: Landfill Visual Inspection Photo Log – Beach Landfill (page 1 of 2)

Site Name: CAM-3, Shepherd Bay
Landfill: Beach Landfill
Date Inspected: August 23, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (BLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C314_3303	3995	14/08/23	49716	39778	View looking west from access road on northeast side of Beach Landfill
2	C314_3304	4331	14/08/23	49703	39775	View looking southwest along east side of Beach Landfill
3	C314_3305	4293	14/08/23	49703	39777	View looking northwest along dry drainage channel extending along northeast side of Beach Landfill
4	C314_3306	1224	14/08/23	49695	39775	Panoramic view looking southwest to northwest across cover from northeast corner of Beach Landfill
5	C314_3307	4375	14/08/23	49682	39782	View looking southeast at linear depression on northeast crest of Beach Landfill - Feature B
6	C314_3308	1349	14/08/23	49671	39805	Panoramic view looking southeast to southwest from downgradient (northwest) side of Beach Landfill
7	C314_3309	4451	14/08/23	49674	39804	View looking southeast along drainage channel extending north side of Beach Landfill
8	C314_3310	4334	14/08/23	49669	39797	View looking east-southeast along north side of Beach Landfill
9	C314_3311	4272	14/08/23	49655	39784	View looking southwest at two pothole depressions on north crest of Beach Landfill - Feature B
10	C314_3312	4431	14/08/23	49643	39777	View looking northeast at two pothole depressions on north crest of Beach Landfill - Feature B
11	C314_3313	1279	14/08/23	49641	39794	Panoramic view looking east-northeast to southwest from west side of Beach Landfill
12	C314_3314	4293	14/08/23	49652	39760	View looking northwest at large subtle depression on west side of Beach Landfill cover - Feature A
13	C314_3315	4353	14/08/23	49640	39760	View looking northeast at large subtle depression on west side of Beach Landfill cover - Feature A
14	C314_3316	1236	14/08/23	49615	39769	Panoramic view looking north-northeast to southeast from southwest side of Beach Landfill
15	C314_3317	4320	14/08/23	49625	39776	View looking southeast at rutting located south of Beach Landfill
16	C314_3318	4309	14/08/23	49625	39763	View looking northwest at rutting located south of Beach Landfill
17	C314_3321	4296	14/08/23	49641	39753	View looking northwest along southwest side slope of Beach Landfill
18	C314_3322	4378	14/08/23	49643	39753	View looking east-southeast along south side slope of Beach Landfill
19	C314_3323	4313	14/08/23	49647	39749	View looking northeast at minor erosion on southwest slope of Beach Landfill - Feature D
20	C314_3324	4427	14/08/23	49651	39756	View looking southwest at minor erosion on southwest slope of Beach Landfill - Feature D
21	C314_3325	4380	14/08/23	49677	39744	View looking west along south side of Beach Landfill
22	C314_3326	4331	14/08/23	49678	39744	View looking northeast along east side of Beach Landfill
23	C314_3327	1153	14/08/23	49676	39747	Panoramic view looking northwest to northeast across cover from south corner of Beach Landfill
24	C314_3328	4436	14/08/23	49665	39740	View looking west at shallow drainage feature extending around south side of Beach Landfill
25	C314_3329	4318	14/08/23	49667	39740	View looking northeast at shallow drainage feature extending around southeast corner of Beach Landfill
26	C314_3330	946	14/08/23	49641	39740	Panoramic view looking west to northeast from southeast of Beach Landfill
27	C314_3331	4431	14/08/23	49679	39752	View looking south at subtle depression on southeast side slope of Beach Landfill - Feature A
28	C314_3332	4502	14/08/23	49685	39759	View looking south-southwest at subtle depression on southeast cover of Beach Landfill - Feature A
29	C314_3333	4403	14/08/23	49684	39766	View looking south at horseshoe shaped depression on surface of Beach Landfill - Feature A
30	C314_3334	4384	14/08/23	49685	39771	View looking southeast at shallow erosion feature extending along east side of Beach Landfill - Feature C
31	C314_3335	4366	14/08/23	49698	39763	View looking northwest at linear erosion feature extending along east side of Beach Landfill - Feature C

Table VI: LANDFILL VISUAL INSPECTION PHOTO LOG (PAGE 2 of 2)

Soil Sampling

Photo (BLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
C3-1	C314_3336	4395	14/08/23	49704	39748	Sampling location C3-1 located upgradient of Beach Landfill
S1	C314_3337	4393	14/08/23	49707	39746	View northwest at C3-1 soil sample location
C3-2	C314_3319	4362	14/08/23	49623	39781	Sampling location C3-2 located downgradient of Beach Landfill
S2	C314_3320	4392	14/08/23	49619	39780	View looking east at C3-2 soil sample location
C3-3	C314_3338	4402	14/08/23	49658	39799	Sampling location C3-3 located downgradient of Beach Landfill
S3	C314_3339	4358	14/08/23	49656	39799	View looking east at C3-3 soil sample location

3.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Beach 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.

Table VII: Beach Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C314-1A	C3-1	0-15	1.3	<0.01	4.9	2.1	5.2	<4.9	4.0	9	<0.01	<0.1	<10	<50	<50
C314-1B		40-50	1.1	<0.01	4.9	1.9	42.9	5.7	16.9	13	0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-2A	C3-2	0-15	1.1	<0.01	4.6	2.0	3.3	6.6	3.5	14	<0.01	<0.1	<10	<50	<50
C314-2B		40-50	2.1	<0.01	6.6	2.4	5.4	6.5	6.0	10	<0.01	<0.1	<10	<50	<50
C314-3A	C3-3	0-15	1.3	0.02	4.8	1.9	4.1	8.1	3.6	9	<0.01	<0.1	<10	<50	<50
C314-3B		40-50	1.4	<0.01	5.6	2.2	3.9	<4.9	5.2	8	<0.01	<0.1	<10	<50	<50

4 NON-HAZARDOUS WASTE LANDFILL

4.1 SUMMARY

On August 22, 2014 soil sampling, groundwater sampling, and a visual inspection were completed at the Non-Hazardous Waste Landfill.

Detectable concentration of 98 mg/kg TPH (PHC Fraction F3) was noted in the surface soil sample collected at MW-3. This station is located downgradient of the Non-Hazardous Waste Landfill. PCBs or relatively high metal concentrations were not detected in the collected soil samples. All monitoring wells were dry at the time of the assessment and consequently could not be sampled.

As of the 2014 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Several areas of minor settlement, including three newly noted areas were observed on the landfill. Minor erosion consistent with the previous 2012 observations was noted on the northwest side slope. One piece of partially exposed surface debris was noted on the landfill cover, also consistent with previous observations.

The monitoring well casings remain in good condition.

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

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table VIII of this report.

Table VIII: Visual Inspection Checklist / Report – NHWLF

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

Inspection Report - Page 1 of 2

SITE NAME: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: Non-Hazardous Waste Landfill (New Landfill)
DATE OF INSPECTION: August 22, 2014
DATE OF PREVIOUS INSPECTION: August 22, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT: 6
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: NON - HAZARDOUS WASTE LANDFILL VISUAL INSPECTION (PAGE 2 OF 2)

Site Name: CAM-3 Shepherd Bay
Landfill: Non-Hazardous Waste Landfill
Designation: New Landfill
Date Inspected: August 22, 2012
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.3 (NW and SW crests) - 1 New Obs.	0.4 - 7 m	0.15 - 1 m	0.05 - 0.07 m	Occasional	Minor depressions	NHWLF-31, 32, 41-45	Acceptable	Subtle depressions along northwest and southwest crest and side slopes. Slopes appear stable.
		FEATURE D See Figure CAM-3.3 (SE side slope) - 2 New Obs.	0.3 - 1 m	0.15 - 0.4 m	0.02 - 0.1 m	Occasional	Minor depressions	NHWLF-20-25	Acceptable	Subtle depressions along southeast side slope. Slopes appear stable.
Erosion	Yes	FEATURE B See Figure CAM-3.3 (NW side slope)	6 m	0.15 - 0.3 m	0.02 - 0.05 m	Occasional	Minor erosion	NHWLF-33-37	Acceptable	Washing of fines. Self armouring. Consistent with 2012 observations.
Frost Action	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation	Yes	FEATURE B See Figure CAM-3.3 (Cover and SW, NE side slope)	N/A	N/A	N/A	N/A	Very sparse vegetation	NHWLF-26, 29, 39	N/A	N/A
Staining	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Debris Exposed	Yes	FEATURE C See Figure CAM-3.3 (centre of cover)	0.15 m exposed	5 cm exposed	Unknown	Isolated	Metal bed rail	NHWLF-49, 50	Acceptable	Partially exposed metal debris observed at one location. Consistent with 2012 observation.
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM 3.3 MW-1 to MW-3	N/A	N/A	N/A	N/A	N/A	NHWLF-1, 10, 12	Acceptable	The monitoring wells were in good condition.
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observable	N/A
Additional Photos	Yes	See Figure CAM-3.3 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

4.2 PRELIMINARY STABILITY ASSESSMENT

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

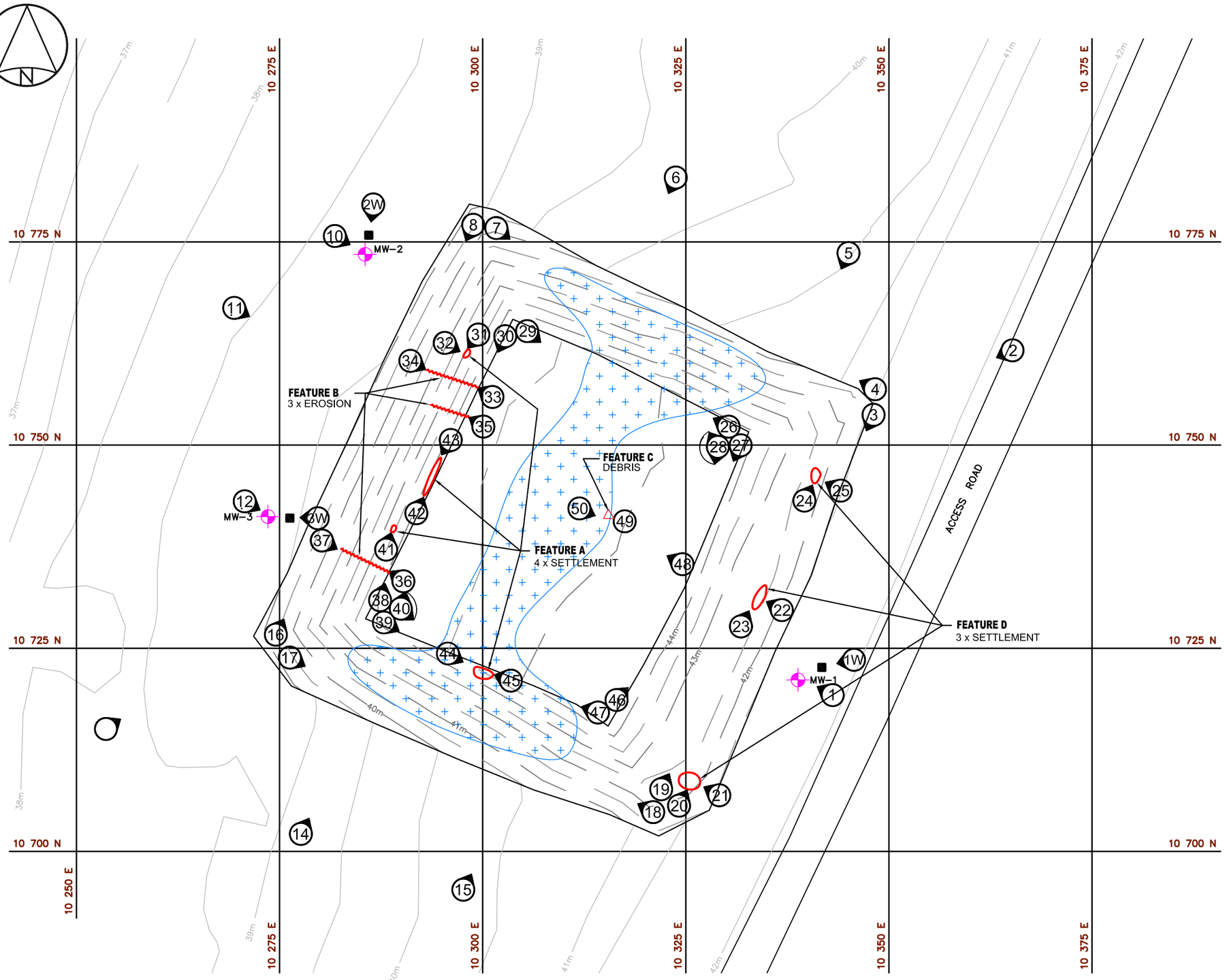
Table IX: Preliminary Stability Assessment – NHWLF

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

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

4.3 LOCATION PLAN

The Location Plan for the NHWLF has been completed as per the TOR and is presented in Figure CAM-3.3.



LEGEND

- MONITORING WELL LOCATION
- PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- EROSION (NTS)
- CRACK (NTS)
- DEBRIS (NTS)
- SPARSE VEGETATION
- MONITORING SOIL SAMPLE LOCATION

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	P.L. PAR	A.P. VERIF.	P.G. APPR.
1	FINAL	15–04–27			

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, 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 : 500	APRIL 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. ENG
PROJECT NO: CD2656_004_160	DRAWING NO: CD2656_004_160_101-CAM-3_3	PAGE PL

FIGURE CAM-3.3

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_3.dwg, PL, 2015-04-27 8:42:03 AM

4.4 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 X. Full-sized photographs are contained in the Addendum DVD-ROM.

Table X: Landfill Visual Inspection Photo Log – NHWLF (page 1 of 2)

Site Name: CAM-3, Shepherd Bay
Landfill: Non-Hazardous Waste Landfill
Date Inspected: August 22, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C314_2770	4 315	14/08/22	10343	10720	View looking northwest at MW-1
2	C314_2771	4 302	14/08/22	10365	10762	View looking west from roadway northeast of NHWLF
3	C314_2772	4 272	14/08/22	10348	10754	View looking southwest along southeast toe of NHWLF
4	C314_2773	4 460	14/08/22	10348	10756	View looking northwest along northeast toe of NHWLF
5	C314_2774	4 316	14/08/22	10345	10774	View looking southwest at northeast side of NHWLF
6	C314_2775	4 437	14/08/22	10324	10783	View looking southwest at northeast side of NHWLF
7	C314_2776	4 463	14/08/22	10301	10777	View looking southeast along northeast toe of NHWLF
8	C314_2777	4 291	14/08/22	10299	10777	View looking southwest along northwest toe of NHWLF
9	C314_2778	4 246	14/08/22	10291	10791	View looking east-southeast from northwest of NHWLF. MW-2 in foreground.
10	C314_2779	4 359	14/08/22	10282	10776	View looking southeast at MW-2
11	C314_2780	4 396	14/08/22	10270	10767	View looking southeast along northwest side of NHWLF
12	C314_2782	4 322	14/08/22	10271	10743	View looking southeast at MW-3
13	C314_2783	4 368	14/08/22	10254	10715	View looking northeast from southwest side of NHWLF
14	C314_2784	4 415	14/08/22	10278	10702	View looking northeast at southwest side of NHWLF
15	C314_2785	4 452	14/08/22	10298	10695	View looking northeast at southwest side of NHWLF
16	C314_2786	4 335	14/08/22	10275	10726	View looking northeast along northwest toe of NHWLF. MW-3 visible on left.
17	C314_2787	4 429	14/08/22	10276	10724	View looking southeast along southwest toe of NHWLF.
18	C314_2788	4 415	14/08/22	10322	10704	View looking NW along southwest toe of NHWLF.
19	C314_2789	4 380	14/08/22	10323	10706	View looking NE along southeast side slope of NHWLF. MW-1 on far right.
20	C314_2793	4 417	14/08/22	10324	10706	View looking northeast at small pothole depression on southeast side slope - FEATURE D (new)
21	C314_2794	4 380	14/08/22	10328	10708	View looking northwest at small pothole depression on southeast side slope - FEATURE D (new)
22	C314_2795	4 369	14/08/22	10336	10730	View looking northwest at linear depression at toe of mid-slope on southeast side of NHWLF - FEATURE D (new)
23	C314_2796	4 413	14/08/22	10332	10728	View looking northeast at linear depression at toe of mid-slope on southeast side of NHWLF - FEATURE D (new)
24	C314_2797	4 371	14/08/22	10340	10744	View looking northeast at minor depression at crest of mid-slope bench on southeast side of NHWLF - FEATURED
25	C314_2798	4 297	14/08/22	10344	10744	View looking northwest at minor depression at crest of mid-slope bench on southeast side of NHWLF - FEATURE D
26	C314_2799	4 322	14/08/22	10331	10752	View looking northwest along northeast crest of NHWLF
27	C314_2800	4 313	14/08/22	10331	10751	View looking southwest along southeast crest of NHWLF
28	C314_2801	1 294	14/08/22	10330	10750	Panoramic view looking south to northwest from east corner across cover of NHWLF
29	C314_2802	4 353	14/08/22	10305	10764	View looking northwest along southwest crest of NHWLF
30	C314_2803	4 314	14/08/22	10303	10763	View looking northeast along southeast crest of NHWLF

Table X: LANDFILL VISUAL INSPECTION PHOTO LOG - NHWLF (PAGE 2 OF 2)

Photo (NHWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
31	C314_2804	4 373	14/08/22	10299	10763	View looking southwest at small depression on northwest side slope of NHWLF - FEATURE A (new)
32	C314_2805	4 365	14/08/22	10296	10762	View looking southeast at small depression on northwest side slope of NHWLF - FEATURE A (new)
33	C314_2808	4 339	14/08/22	10301	10756	View looking northwest at minor erosion on northwest slope of NHWLF - FEATURE B
34	C314_2809	4 364	14/08/22	10291	10760	View looking southeast at minor erosion on northwest slope of NHWLF - FEATURE B
35	C314_2810	4 320	14/08/22	10300	10752	View looking northwest at minor erosion on northwest slope of NHWLF - FEATURE B
36	C314_2811	4 328	14/08/22	10289	10734	View looking northwest at minor erosion on northwest slope of NHWLF - FEATURE B
37	C314_2812	4 331	14/08/22	10281	10738	View looking southeast at minor erosion on northwest slope of NHWLF - FEATURE B
38	C314_2813	4 408	14/08/22	10288	10730	View looking northeast at northwest crest of NHWLF
39	C314_2814	4 333	14/08/22	10288	10729	View looking southeast along southwest crest of NHWLF
40	C314_2815	1 380	14/08/22	10290	10730	Panoramic view looking north to southwest across cover from southwest corner of NWHLF
41	C314_2818	4 374	14/08/22	10288	10737	View looking northeast at small depression below crest on northwest side of NHWLF - FEATURE A
42	C314_2822	4 390	14/08/22	10292	10742	View looking northeast at linear depression along northwest crest - FEATURE A
43	C314_2823	4 420	14/08/22	10296	10749	View looking southwest at linear depression along northwest crest - FEATURE A
44	C314_2824	4 317	14/08/22	10297	10724	View looking southeast at depression below crest on mid-southwest side of NHWLF - FEATURE A
45	C314_2825	4 396	14/08/22	10303	10721	View looking northwest at depression below crest on mid-southwest side of NHWLF- FEATURE A
46	C314_2826	4 430	14/08/22	10316	10718	View looking northeast along southeast crest of NHWLF
47	C314_2827	4 303	14/08/22	10315	10717	View looking northwest along southwest crest of NHWLF
48	C314_2829	4 290	14/08/22	10325	10735	View looking northwest across cover from southeast crest.
49	C314_2831	4 285	14/08/22	10318	10741	Exposed metal debris (bed rail) on surface of landfill cover - FEATURE C
50	C314_2832	4 353	14/08/22	10313	10742	View looking southeast at exposed metal debris in center of landfill cover - FEATURE C
Soil Sampling						
MW-1	C314_2790	4 412	14/08/22	10342	10722	Sampling location 1W located upgradient of NHWLF
1W	C314_2791	4 383	14/08/22	10345	10723	View west at MW-1 soil sample location
MW-2	C314_2806	4 277	14/08/22	10286	10776	Sampling location 2W located downgradient of NHWLF
2W	C314_2807	4 334	14/08/22	10286	10779	View south at MW-2 soil sample location
MW-3	C314_2816	4 461	14/08/22	10276	10741	Sampling location 3W located downgradient of NHWLF
3W	C314_2817	4 344	14/08/22	10279	10741	View west at MW-3 soil sample location

4.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Non-Hazardous Waste 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.

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

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C314-1WA	MW-1	0-15	4.7	0.01	13.8	3.7	5.2	7.1	9.0	14	<0.01	<0.1	<10	<50	<50
C314-1WB		40-50	4.6	<0.01	11.6	3.6	4.8	22.8	10.2	13	<0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-2WA	MW-2	0-15	4.0	0.02	16.9	3.6	4.8	6.2	7.2	11	<0.01	<0.1	<10	<50	<50
C314-2WB		40-50	3.7	0.01	15.3	3.5	4.4	5.7	6.0	9	<0.01	<0.1	<10	<50	<50
C314-3WA	MW-3	0-15	10.0	0.11	12.8	3.4	8.5	5.1	7.0	24	0.04	<0.1	<10	<50	98
C314-3WB		40-50	5.1	0.02	13.5	3.2	4.0	7.5	5.8	9	<0.01	<0.1	<10	<50	<50

4.6 GROUNDWATER SAMPLE ANALYTICAL DATA

As noted in Section 4.1 above, all monitoring well installations at the NHWLF were dry at the time of the 2014 monitoring program and consequently could not be sampled.

4.7 MONITORING WELL SAMPLING / INSPECTION LOGS

The monitoring well sampling logs for MW-1 to MW-3 are presented in this section.

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-22	Time:	10:15
Names of Samplers:	A.Passalis		
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-1		
Sample Number:	N/A (dry)		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	37		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	346		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	46		
Depth to water surface (cm)= (from top of pipe)	N/A	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	N/A		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	179	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	N/A		
Static volume of water in well (mL)=	N/A		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	N	Purging/Sampling Equipment:	N/A
Volume Purged Water=	N/A		
Decontamination required: (Y/N)	N/A		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	N/A		
Final Conductivity (uS/cm)=	N/A		
Final Temperature (degC)=	N/A		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-22	Time:	10:30
Names of Samplers:	A.Passalis		
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-2		
Sample Number:	N/A (dry)		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	35		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	354		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	54		
Depth to water surface (cm)= (from top of pipe)	N/A	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	N/A		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	161	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	N/A		
Static volume of water in well (mL)=	N/A		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	N	Purging/Sampling Equipment:	N/A
Volume Purged Water=	N/A		
Decontamination required: (Y/N)	N/A		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	N/A		
Final Conductivity (uS/cm)=	N/A		
Final Temperature (degC)=	N/A		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-22	Time:	10:45
Names of Samplers:	A.Passalis		
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-3		
Sample Number:	N/A (dry)		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	44		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	N/A	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	N/A		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	181	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	N/A		
Static volume of water in well (mL)=	N/A		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	N	Purging/Sampling Equipment:	N/A
Volume Purged Water=	N/A		
Decontamination required: (Y/N)	N/A		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	N/A		
Final Conductivity (uS/cm)=	N/A		
Final Temperature (degC)=	N/A		

5 STATION LANDFILL

5.1 SUMMARY

On August 22, 2014 soil sampling and a visual inspection were completed at the Station Landfill.

Relatively high metal concentrations were not detected in the collected soil samples. One elevated PCB concentration of 2.8 mg/kg was detected at surface in the upgradient sample location C3-4A. All other PCB concentrations were below the method detection limit (0.1 mg/kg). TPH was detected in the surface sample at sample location C3-7 (90 mg/kg).

As of the 2014 monitoring event, no features were identified with “significant” or “unacceptable” severity ratings. Occasional areas of minor settlement and erosion were observed on the landfill surface and side slopes of Lobes B and C. One area of minor staining was also noted on the east toe of Lobe A.

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

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table XII of this report.

Table XII: Visual Inspection Checklist - Station Landfill

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

Inspection Report - Page 1 of 3

SITE NAME: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: Station Landfill (Regrade Landfill)
DATE OF INSPECTION: August 22, 2014
DATE OF PREVIOUS INSPECTION: August 21, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT: 6
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: STATION LANDFILL VISUAL INSPECTION (PAGE 2 OF 3)

Site Name: CAM-3 Shepherd Bay
Landfill: Station Landfill
Designation: Regrade Landfill
Date Inspected: August 22, 2014
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature:

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.4 (NE crest of Lobe B) - 1 New Obs.	0.7 - 2.m	0.2 - 0.5 m	0.02-0.05 m	Occasional	Six small depressions	SLF-44-49	Acceptable	Minor depressions along NE crest of lobe.
		FEATURE B See Figure CAM-3.4 (Lobe B - C Cover and S side slope)	0.2 - 0.3 m	0.1 - 0.3 m	0.05 - 0.07 m	Occasional	Two small depressions	SLF-30, 62	Acceptable	Isolated pot hole depression on central cover area. Small depression along erosion feature on south side slope. No significant change from previous observation.
		FEATURE C See Figure CAM-3.4 (Lobe C - Cover and all side slopes) 3 New Obs.	0.3 - 3.5 m	0.1 - 0.3 m	0.02 - 0.05 m	Occasional	Eight small depressions	SLF-69, 73, 77, 80, 84, 86-88	Acceptable	Localized depressions/potholes on central cover and crest areas. Cover appears stable.
Erosion	Yes	FEATURE D See Figure CAM-3.4 (Lobe B, NW corner) - 1 New Obs.	4 - 25 m	0.2 - 1 m	0.02 - 0.1 m	Isolated	Minor erosion on NW side slope and along runoff channel extending around northwest corner	SLF-50, 51, 53	Acceptable	Fines washing on side slope. Erosion around NW corner confined to constructed runoff channel extending around north end of lobe. Not in contact with lobe. Appears to be self armouring.
		FEATURE E See Figure CAM-3.4 (Lobe B, mid-slope) - 1 New Obs.	12- 30 m	0.1 - 3 m	0.01 - 0.05 m	Occasional	Erosion on landfill surface - mid-slope	SLF-57-60, 63-66	Acceptable	Minor erosion on landfill surface due to channelling of surface runoff. Cover appears stable and self armouring.
		FEATURE F See Figure CAM-3.4 (Lobe B, S , SW an d SE side slopes) 2 New Obs.	3 - 20 m	0.1 - 2.5 m	0.01 - 0.05 m	Occasional (<2%)	12 locations of minor erosion along south and southwest side slopes	SLF-7-10, 17, 18, 22-25, 28, 29, 34, 35, 40, 41	Acceptable	Minor erosion on side slope of Lobe B. Minor washing of fines. Appears to be self armouring.
		FEATURE G See Figure CAM-3.4 (Lobe B, E side)	6 - 10 m	0.4 - 4 m	0.05 m	Isolated	Erosion on east side slope and toe	SLF-37, 38, 43	Acceptable	Minor erosion on side slope. Minor washing of fines. Appears to be self armouring. Channel on east toe not in contact with lobe. No significant change from previous observation.
		FEATURE H See Figure CAM-3.4 (Lobe C, W side)	8 m	0.15 m	0.1 m	Isolated	Erosion along west toe	SLF-68, 71	Acceptable	Erosion forming armoured channel along west toe of Lobe C (self armouring). Not in contact with lobe. No significant change from previous observation.
		FEATURE I See Figure CAM-3.4 (Lobe C, W side slope)	1.5 m	0.2 m	0.05 m	Isolated	Erosion on west side slope	SLF-70	Acceptable	Minor washing of fines. Self armouring. No significant change from previous observation.

TABLE XII: STATION LANDFILL VISUAL INSPECTION (PAGE 3 OF 3)

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Frost Action	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Staining	Yes	FEATURE J See Figure CAM-3.4 (Lobe A)	1.5 m	0.6 m	N/A	Isolated	Minor staining along east toe	SLF-4	Acceptable	Localized rust coloured staining at the toe of slope. No ponding or sheen observed. No significant change from previous observation.
Vegetation Stress	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Debris Exposed	Yes	FEATURE K See Figure CAM-3.4 (Lobe B , S slope)	0.15 m	0.08 m	Unknown	Isolated	Partially exposed metal debris	SLF-31	Acceptable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Other Features of Note:	Yes	FEATURE L See Figure CAM-3.4 (Lobe B, SW cover)	10 m	5 - 30 mm	Unknown	Isolated	Mostly infilled zig-zag crack extending north from south crest.	SLF-11 -14	Acceptable	Infilled tension/desiccation cracks. Increased from previous observation.
Additional Photos	Yes	See Figure CAM-3.4 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

5.2 PRELIMINARY STABILITY ASSESSMENT

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

Table XIII: Preliminary Stability Assessment – Station Landfill

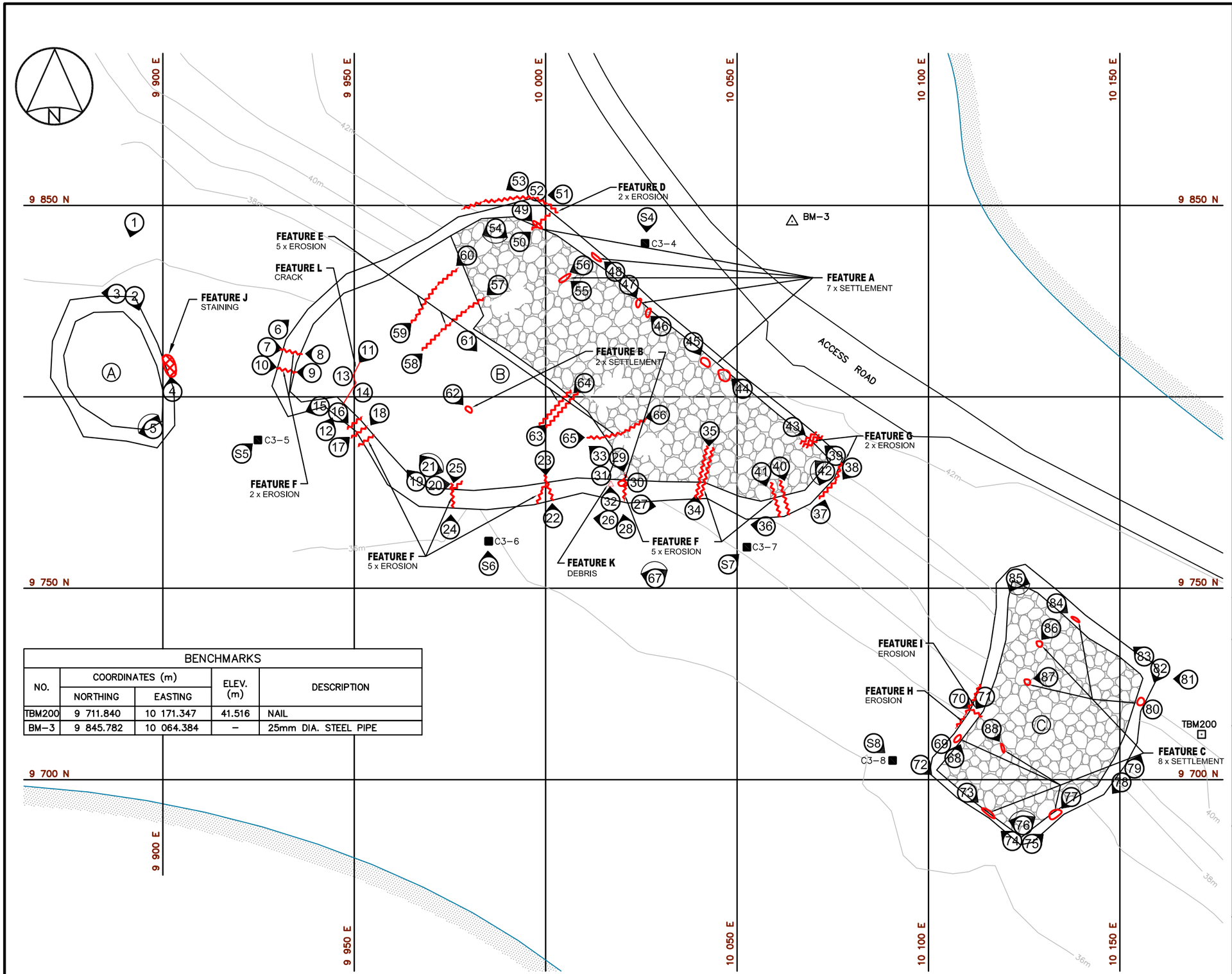
Feature	Severity Rating	Extent
Settlement	Acceptable	Occasional
Erosion	Acceptable	Occasional
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris exposure	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

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

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

5.3 LOCATION PLAN

The Location Plan for the Station Landfill has been completed as per the TOR and is presented in Figure CAM-3.4.



BENCHMARKS

NO.	COORDINATES (m)		ELEV. (m)	DESCRIPTION
	NORTHING	EASTING		
TBM200	9 711.840	10 171.347	41.516	NAIL
BM-3	9 845.782	10 064.384	–	25mm DIA. STEEL PIPE

LEGEND

- CM27 — SURVEY CONTROL MONUMENT
- TBM208 — TEMPORARY BENCHMARK
- 1 — PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- EROSION (NTS)
- CRACK (NTS)
- DEBRIS (NTS)
- STAINING (NTS)
- MONITORING SOIL SAMPLE LOCATION

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	P.L.	A.P.	P.G.
1	FINAL	15-04-27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

STATION 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	APRIL 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. ENG
PROJECT NO: CD2656_004_160	DRAWING NO: CD2656_004_160_101-CAM-3_4	PAGE PL

FIGURE CAM-3.4

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_4.dwg, PL, 2015-04-27 8:46:02 AM

5.4 PHOTOGRAPHIC RECORDS

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

Table XIV: Landfill Visual Inspection Photo Log – Station Landfill (page 1 of 3)

Site Name: CAM-3, Shepherd Bay
Landfill: Station Landfill
Date Inspected: August 22, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (SLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe A						
1	C314_2833	4 298	14/08/22	9893	9845	View south-southwest at Lobe A
2	C314_2834	4 297	14/08/22	9892	9826	View looking south along east side of Lobe A
3	C314_2835	4 367	14/08/22	9889	9827	View looking west along north side of Lobe A
4	C314_2836	4 363	14/08/22	9903	9802	View looking north along east toe of Lobe A. Note rust coloured staining along edge of granular cover - FEATURE J
5	C314_2837	1 470	14/08/22	9897	9792	Panoramic view looking west to northeast across surface from south end of Lobe A
Lobe B						
6	C314_2839	4 338	14/08/22	9931	9817	View looking northeast along northwest side of Lobe B
7	C314_2840	4 400	14/08/22	9930	9811	View looking east at 2 areas of minor erosion on west side slope of Lobe B - FEATURE F (new)
8	C314_2843	4 464	14/08/22	9938	9811	View looking west at 2 areas of minor erosion on west side slope of Lobe B - FEATURE F (new)
9	C314_2844	4 378	14/08/22	9936	9806	View looking southwest at minor erosion on southwest side of Lobe B - FEATURE F
10	C314_2845	4 316	14/08/22	9928	9808	View looking northeast at minor erosion on southwest side of Lobe B - FEATURE F
11	C314_2846	4 356	14/08/22	9952	9810	View looking south at mostly in-filled crack on southwest cover of Lobe B - FEATURE L
12	C314_2847	4 346	14/08/22	9944	9793	View looking north at mostly in-filled crack on southwest cover of Lobe B - FEATURE L
13	C314_2848	4 261	14/08/22	9948	9805	View of crack on southwest cover of Lobe B - FEATURE L
14	C314_2849	4 395	14/08/22	9950	9801	View of crack on southwest cover of Lobe B - FEATURE L
15	C314_2850	4 394	14/08/22	9942	9797	View looking southwest along southwest side slope of Lobe B
16	C314_2851	4 314	14/08/22	9944	9796	View looking southeast along southwest side slope of Lobe B
17	C314_2853	4 268	14/08/22	9947	9788	View looking NE at minor erosion on southwest side slope of Lobe B - FEATURE F
18	C314_2854	4 416	14/08/22	9954	9794	View looking SW at minor erosion on southwest side slope of Lobe B - FEATURE F
19	C314_2855	4 447	14/08/22	9967	9778	View looking northwest along south side of Lobe B
20	C314_2856	4 386	14/08/22	9970	9777	View looking northeast along south side of Lobe B
21	C314_2857	1 043	14/08/22	9969	9781	Panoramic view looking northwest to east across cover from south side of Lobe B
22	C314_2860	4 309	14/08/22	10002	9770	View looking north at minor erosion on south side slope - FEATURE F
23	C314_2861	4 371	14/08/22	10000	9780	View looking south at minor erosion on south side slope - FEATURE F
24	C314_2862	4 340	14/08/22	9976	9768	View looking N at minor erosion on south slope of Lobe B - FEATURE F
25	C314_2863	4 389	14/08/22	9976	9779	View looking S at minor erosion on south slope of Lobe B - FEATURE F
26	C314_2865	4 387	14/08/22	10020	9772	View looking west along south side slope of Lobe B
27	C314_2866	4 362	14/08/22	10023	9772	View looking east along southeast side slope of Lobe B
28	C314_2867	4 385	14/08/22	10021	9768	View looking north at winding erosion on southeast side slope of Lobe B - FEATURE F.
29	C314_2868	4 349	14/08/22	10019	9782	View looking north at winding erosion on southeast side slope of Lobe B - FEATURE F.
30	C314_2869	4 353	14/08/22	10021	9778	View of pothole depression on southeast side of Lobe B - FEATURE B

Table XIV: LANDFILL VISUAL INSPECTION PHOTO LOG - STATION LANDFILL (PAGE 2 OF 3)

Photo (SLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe B (Cont'd)						
31	C314_2870	4 259	14/08/22	10016	9778	View of partially exposed metal debris on south side of Lobe B - FEATURE K
32	C314_2871	4 386	14/08/22	10017	9775	View looking north at partially exposed metal debris on south side of Lobe B - FEATURE K
33	C314_2872	4 481	14/08/22	10015	9783	View looking northwest at minor erosion along toe of mid slope of Lobe B.
34	C314_2873	4 393	14/08/22	10039	9772	View looking north at erosion on mid slope - FEATURE F
35	C314_2874	4 418	14/08/22	10043	9789	View looking south at erosion on mid slope - FEATURE F
36	C314_2875	4 298	14/08/22	10058	9767	View looking west along south toe of Lobe B
37	C314_2876	4 343	14/08/22	10071	9770	View looking northeast at minor erosion along southeast toe of Lobe B - FEATURE G
38	C314_2877	4 291	14/08/22	10078	9782	View looking southwest at minor erosion along southeast toe of Lobe B - FEATURE G
39	C314_2878	4 327	14/08/22	10076	9784	View looking northwest along northeast side of Lobe B
40	C314_2879	4 383	14/08/22	10061	9781	View looking south-southeast at minor erosion on southeast side slope of Lobe B - FEATURE F (new)
41	C314_2880	4 370	14/08/22	10057	9780	View looking south-southeast at minor erosion on southeast side slope of Lobe B - FEATURE F (new)
42	C314_2883	1 212	14/08/22	10073	9781	Panoramic view looking southwest to northwest from southeast of Lobe B
43	C314_2884	4 393	14/08/22	10066	9791	View looking southeast at erosion on southeast side slope of Lobe B - FEATURE G
44	C314_2885	4 379	14/08/22	10051	9801	View looking northwest at minor depression on north crest of Lobe B - FEATURE A
45	C314_2886	4 428	14/08/22	10040	9812	View looking southeast at minor depression along north crest of Lobe B - FEATURE A
46	C314_2887	4 299	14/08/22	10028	9820	View looking northwest at minor depression above north crest of Lobe B - FEATURE A
47	C314_2888	4 281	14/08/22	10022	9827	View looking southeast at minor depression along north crest of Lobe B - FEATURE A
48	C314_2889	4 447	14/08/22	10018	9832	View looking northwest at depression parallel to crest on north corner of Lobe B - FEATURE A
49	C314_2890	4 463	14/08/22	9995	9847	View looking southeast at minor erosion at crest on north side of Lobe B - FEATURE A
50	C314_2891	4 383	14/08/22	9995	9842	View looking northeast at minor erosion at crest on north side of Lobe B - FEATURE D
51	C314_2892	4 359	14/08/22	10002	9852	View looking W along dry drainage feature located on northwest corner of Lobe B - FEATURE D
52	C314_2893	4 396	14/08/22	9997	9852	Piece of exposed wood debris on south slope of drainage channel on northwest corner of Lobe B
53	C314_2894	4 413	14/08/22	9992	9855	View looking SW along dry drainage feature located on northwest corner of Lobe B - FEATURE D
54	C314_2895	1 240	14/08/22	9987	9844	Panoramic view looking southeast to southwest across surface from north corner of Lobe B
55	C314_2898	4 370	14/08/22	10009	9828	View looking northwest at linear depressions on north cover of Lobe B - FEATURE (new)
56	C314_2899	4 452	14/08/22	10009	9834	View looking southwest at linear depressions on north cover of Lobe B - FEATURE (new)
57	C314_2902	4 328	14/08/22	9986	9828	View looking southwest at minor erosion on north cover of Lobe B - FEATURE E
58	C314_2903	4 310	14/08/22	9967	9810	View looking northeast at minor erosion on north cover of Lobe B - FEATURE E
59	C314_2904	4 451	14/08/22	9964	9818	View looking northeast at minor erosion on north cover of Lobe B - FEATURE E
60	C314_2905	4 401	14/08/22	9978	9836	View looking southwest at minor erosion on north cover of Lobe B - FEATURE E
61	C314_2906	4 338	14/08/22	9981	9812	View looking southeast along toe of mid-slope of Lobe B
62	C314_2907	4 346	14/08/22	9977	9800	View looking southeast at pothole depression on central cover of Lobe B - FEATURE B
63	C314_2908	4 273	14/08/22	9998	9790	View looking northeast at 2 areas of minor erosion on mid-slope on south side of Lobe B - FEATURE E
64	C314_2909	4 377	14/08/22	10008	9802	View looking southwest at minor erosion on mid-slope on south side of Lobe B - FEATURE E
65	C314_2911	4 346	14/08/22	10008	9789	View looking east at erosion on east end of mid-slope - FEATURE E
66	C314_2912	4 349	14/08/22	10028	9795	View looking southwest at erosion at east end of mid-slope - FEATURE E
67	C314_2913	1 120	14/08/22	10029	9754	Panoramic view looking northwest to northeast at south side of Lobe B

Table XIV: LANDFILL VISUAL INSPECTION PHOTO LOG - STATION LANDFILL (PAGE 3 OF 3)

Photo (SLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe C						
68	C314_2916	4 463	14/08/22	10107	9708	View looking northeast along west side of Lobe C
69	C314_2917	4 391	14/08/22	10104,1	9709,3	View of pothole depression on southwest side slope of Lobe C - FEATURE C (new)
70	C314_2918	4 270	14/08/22	10109	9720	View looking southeast at minor erosion on west side slope of Lobe C - FEATURE I
71	C314_2919	4 442	14/08/22	10114	9722	View looking south at minor erosion along toe on southwest side of Lobe C - FEATURE H
72	C314_2921	4 370	14/08/22	10100	9704	View looking southeast along south side of Lobe C
73	C314_2922	4 413	14/08/22	10110	9696	View looking southeast at minor depression on south crest of Lobe C - FEATURE C
74	C314_2923	4 297	14/08/22	10123	9685	View looking northwest along south side of Lobe C
75	C314_2924	4 289	14/08/22	10125	9684	View looking northeast along east side of Lobe C
76	C314_2926	1 354	14/08/22	10125	9687	Panoramic view looking west to northeast across cover from southeast corner of Lobe C
77	C314_2927	4 414	14/08/22	10136	9695	View looking southwest at parabolic shaped erosion along crest on southeast corner of Lobe C- FEATURE C (new)
78	C314_2928	4 393	14/08/22	10152	9700	View looking southwest along east side of Lobe C
79	C314_2929	4 282	14/08/22	10153	9702	View looking north-northeast along east side of Lobe C
80	C314_2930	4 398	14/08/22	10158	9718	View of pothole depression on northeast side slope of Lobe C - FEATURE C (new)
81	C314_2931	4 287	14/08/22	10167	9727	View looking west at northeast corner of Lobe C
82	C314_2932	4 372	14/08/22	10160	9729	View looking southwest at northeast corner of Lobe C
83	C314_2933	4 397	14/08/22	10156	9732	View looking northwest along northeast side of Lobe C
84	C314_2934	4 390	14/08/22	10134	9745	View looking southeast at pothole depression on northeast crest of Lobe C - FEATURE C
85	C314_2935	1 492	14/08/22	10123	9752	Panoramic view looking south to northwest across cover from northeast corner of Lobe C
86	C314_2936	4 403	14/08/22	10131	9738	View looking southwest at minor depression on northwest cover of Lobe C - FEATURE C
87	C314_2937	4 368	14/08/22	10129	9727	View looking southeast at minor depression on central cover of Lobe C - FEATURE C
88	C314_2938	4 389	14/08/22	10117	9711	View looking southwest at linear depression on south cover of Lobe C - FEATURE C
Soil Sampling						
C3-4	C314_2896	4282	14/08/22	10026	9841	Sampling location C3-4 located upgradient of Station Landfill - Lobe B
S4	C314_2897	4431	14/08/22	10026	9845	View south at C3-4 soil sample location
C3-5	C314_2841	4382	14/08/22	9925	9788	Sampling location C3-5 located downgradient of Station Landfill - Lobe B
S5	C314_2842	4364	14/08/22	9922	9786	View northeast at C3-5 soil sample location
S3-6	C314_2858	4346	14/08/22	9985	9762	Sampling location C3-6 located downgradient of Station Landfill - Lobe B
S6	C314_2859	4290	14/08/22	9985	9757	View north at C3-6 soil sample location
S3-7	C314_2881	4415	14/08/22	10052	9760	Sampling location C3-7 located downgradient of Station Landfill - Lobe B
S7	C314_2882	4313	14/08/22	10049	9757	View northeast at C3-7 soil sample location
S3-8	C314_2914	4 387	14/08/22	10090	9705	Sampling location C3-8 located downgradient of Station Landfill - Lobe C
S8	C314_2915	4 361	14/08/22	10088	9707	View east at C3-8 soil sample location

5.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Station Landfill 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: Station Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C314-4A	C3-4	0-15	3.1	0.05	9.2	2.8	4.5	8.0	7.3	14	<0.01	2.8	<10	<50	<50
C314-4B		40-50	3.8	0.01	14.2	3.4	5.2	5.2	10.5	9	0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-5A	C3-5	0-15	3.7	0.04	15.3	3.5	5.6	6.4	8.5	14	0.02	<0.1	<10	<50	<50
C314-5B		40-50	6.6	0.03	17.1	3.9	5.7	6.8	10.0	12	0.01	<0.1	<10	<50	<50
C314-6A	C3-6	0-15	4.0	0.18	19.4	3.9	12.0	13.8	18.1	52	0.02	<0.1	<10	<50	<50
C314-6B		40-50	4.6	0.02	28.1	7.0	10.1	5.6	15.3	14	<0.01	<0.1	<10	<50	<50
C314-7A	C3-7	0-15	3.9	0.09	17.4	4.1	7.8	6.7	9.9	22	0.04	<0.1	<10	<50	90
C314-7B		40-50	4.5	0.05	17.4	4.1	6.5	6.0	10.4	17	0.01	<0.1	<10	<50	<50
C314-8A	C3-8	0-15	2.8	0.01	16.6	3.4	5.5	<4.9	9.5	9	<0.01	<0.1	<10	<50	<50
C314-8B		40-50	2.7	0.01	15.7	3.5	5.4	<4.9	9.5	8	0.02	<0.1	<10	<50	<50

6 TIER II DISPOSAL FACILITY

6.1 SUMMARY

The 2014 monitoring of the Tier II Disposal Facility conducted on August 22-24, 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. No TPH, PCB or relatively high metal concentrations were detected in any of the soil samples taken.

Water levels were sufficient to allow sampling of two downgradient well locations at the Tier II Disposal Facility. The well located upgradient of the facility (MW-4) was dry and one well located downgradient (MW-6) contained insufficient water at the time of monitoring and consequently could not be sampled. No PCBs, TPH or relatively high metal concentrations were detected at any of the wells sampled.

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. Batteries were replaced in all dataloggers with the manufacturers' life expectancy of 2019.

As of the 2014 monitoring event, no features were identified with "significant" or "unacceptable" severity ratings. The Tier II Disposal Facility is showing several areas of minor erosion and settlement along the cover and side slopes. Numerous tension cracks were observed along the lower slopes of the southwest, south and southeast sides of the facility. These cracks were in part, associated with three moderate to large settlement areas located along the south toe of the facility. The overall performance of the Tier II Disposal Facility is rating as significant. It should be noted that MW-5 has heaved and the casing can no longer be locked.

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table XVI of this report.

Table XVI: 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: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: Tier II Disposal Facility (New Landfill)
DATE OF INSPECTION: August 22-24, 2014
DATE OF PREVIOUS INSPECTION: August 22, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 6
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 XVI: TIER II DISPOSAL FACILITY VISUAL INSPECTION (PAGE 2 OF 2)

Site Name: CAM-3 Shepherd Bay
Landfill: TIER II Disposal
Designation: New Landfill
Date Inspected: August 22-24, 2012
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature: 

Checklist Item	Present (Yes/No)		Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATUREA See Figure CAM-3.5 (NE cover and side slope) - 1 New Obs.	0.4 - 4 m	0.2 - 0.7 m	0.05 - 0.1 m	Occasional	Four minor surface depressions	Tier II-73, 74, 79, 80	Acceptable	Minor depressions on north cover, northwest crest and northeast side slope and toe
		FEATURE B See Figure CAM-3.5 (W and SW crest)	0.5 - 4 m	0.3 - 0.7 m	0.05 - 0.1 m		Three minor surface depressions	Tier II- 36, 78	Acceptable	Minor depressions along and below south and southwest crest. No significant change from previous observation
		FEATURE C See Figure CAM-3.5 (SE side) - 1 New Obs.	0.3 - 0.5 m	0.15 - 0.3 m	0.05 - 0.1 m		Three minor surface depressions	Tier II-63, 64, 69	Acceptable	Minor depressions on southeast crest and side slope
		FEATURE D See Figure CAM-3.5 (S side/toe)	10 - 12 m	2 - 3 m	0.1- 0.4 m		Three areas with parabolic depressions near toe	Tier II-47-50, 56, 58	Marginal	Extensive cracks noted within and immediately upslope of depressions. Depressions appear to be associated in part with erosional features on south side slope and potential seasonal ponding along toe. Notable increase in magnitude of cracks from previous observation
Erosion	Yes	FEATURE E See Figure CAM-3.5 (W side)	20 m	0.3 -0.5 m	0.02 - 0.05 m	Occasional	Minor surface erosion	Tier II-29, 30	Acceptable	Single area of minor erosion noted along west facing slope. Slope appears stable and self armouring. Consistent with 2012 observations
		FEATURE F See Figure CAM-3.5 (S side)	25 m	0.5 m	0.02 - 0.05 m		Minor surface erosion	Tier II-1, 16, 33, 70	Acceptable	Two areas of minor erosion noted along west facing slope. Slope appears stable and self armouring. Consistent with 2012 observations
Frost Action	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Staining	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Presence/Condition of Monitoring Instruments	Yes	See Figure CAM 3.5	N/A	N/A	N/A	N/A	VT-5 to -8 MW-4 to -7	Tier II-7, 8, 5, 6,9, 10, 31 4, 1, 2, 3, MW-5W, 6W, 7W, 8W	Acceptable	Ground temperature cables and data loggers were in good condition and all data was downloaded. Monitoring well pipe heaving at MW-5. Unable to secure lid on protective pipe
Other Features of Note:	Yes	FEATURE G See Figure CAM-3.5 (SW, S and SE sides) Some New Obs.	4 - 25 m (Varies)	0.002 - 0.1 m	65 cm+ on south side slope	Numerous	Numerous tension cracks	Tier II-37-39, 42-58, 60-62	Significant	Tension cracks up to 8 cm wide extending parallel to south, west and east facing slopes. Some concentric cracking associated with Feature D areas. Majority of cracks extend between 2-6 m of base of slope. Some infilling. Frequency and magnitude appears to have increased from 2012 observations. Largest cracks observed on south side slope
Additional Photos	Yes	See Figure CAM-3.5 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note
Overall Landfill Performance:	**Significant**									

6.2 PRELIMINARY STABILITY ASSESSMENT

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

Table XVII: Preliminary Stability Assessment – Tier II Disposal Facility

Feature	Severity Rating	Extent
Settlement/Cracks	Occasional/Numerous	Marginal/Significant
Erosion	Occasional	Acceptable
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	**Significant**	

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

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

6.3 LOCATION PLAN

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

10 275 E
10 300 E
10 325 E
10 350 E
10 375 E
10 400 E
9 650 N
9 625 N
9 600 N
9 575 N
9 550 N
40m
38m
42m
44m
36m
TBM307
MW–4 B
4 4W
MW–5 5W
MW–6 6W
MW–7 7W
VT–5
VT–6
VT–7
VT–8
MINOR PONDING
FEATURE A
4 x SETTLEMENT
FEATURE B
3 x SETTLEMENT
FEATURE C
3 x SETTLEMENT
FEATURE D
3 x SETTLEMENT
FEATURE E
EROSION
FEATURE F
EROSION
FEATURE G
CRACKS
SPARSE VEGETATION

LEGEND

- TBM20 — TEMPORARY BENCHMARK
- MONITORING WELL LOCATION
- VT — VERTICAL THERMISTOR
- MONITORING SOIL SAMPLE LOCATION
- 1 — PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- EROSION (NTS)
- CRACK (NTS)
- DEBRIS (NTS)
- PONDING
- SPARSE VEGETATION

0 5m 10m 15m 20m 25m

NO.	VERSION	DATE	DRAWN	VERIF.	APPR.
1	FINAL	15–04–27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, 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 : 500	APRIL 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. ENG
PROJECT NO: CD2656_004_160	DRAWING NO: CD2656_004_161_101-CAM-3_5	PAGE PL

FIGURE CAM-3.5

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_5.dwg, PL, 2015-04-27 8:47:40 AM

6.4 PHOTOGRAPHIC RECORDS

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

Table XVIII: Landfill Visual Inspection Photo Log – Tier II Disposal Facility (page 1 of 3)

Site Name: CAM-3, Shepherd Bay
Landfill: Tier II Disposal Facility
Date Inspected: August 22-24, 2012
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C314_2940	4 363	14/08/24	10296	9559	View looking north at MW-5
2	C314_2941	4 411	14/08/24	10323	9547	View looking north at MW-6
3	C314_2942	4 294	14/08/24	10369	9557	View looking northwest at MW-7
4	C314_2943	4 293	14/08/24	10334	9645	View looking south at MW-4
5	C314_3049	4 381	14/08/24	10314	9617	View looking east at VT-6
6	C314_3050	3 822	14/08/24	10316	9615	Datalogger at VT-6
7	C314_3051	4 277	14/08/24	10349	9613	View looking south at VT-5
8	C314_3052	3 922	14/08/24	10348	9611	Datalogger at VT-5
9	C314_3053	4 467	14/08/24	10341	9584	View looking west at VT-7
10	C314_3054	3 897	14/08/24	10338	9582	Datalogger at VT-7
11	C314_3348	4 047	14/08/24	10290	9653	View looking southeast at northwest corner of Tier II DF
12	C314_3349	4 255	14/08/24	10271	9624	View looking east at west side of facility. VT-6 on left and VT-8 on right
13	C314_3351	4 426	14/08/24	10268	9591	View looking east at west side of facility. VT-8 in center.
14	C314_3352	4 237	14/08/24	10271	9564	View looking northeast at southwest corner of Tier II DF
15	C314_3353	4 399	14/08/24	10293	9547	View looking north at south side of Tier II DF. MW-5 visible on far left.
16	C314_3354	4 274	14/08/24	10317	9543	View looking north at south side of Tier II DF. MW-6 visible in right foreground.
17	C314_3355	4 485	14/08/24	10340	9542	View looking north at south side of Tier II DF. VT-7 visible in photo center.
18	C314_3356	4 280	14/08/24	10373	9544	View looking northwest at southeast corner of Tier II DF. MW-7 in foreground.
19	C314_3357	4 398	14/08/24	10392	9577	View looking west at east side of Tier II DF
20	C314_3358	4 336	14/08/24	10393	9597	View looking west at east side of Tier II DF. VT-5 visible on right
21	C314_3359	4 220	14/08/24	10392	9614	View looking west at east side of Tier II DF. VT-5 visible in center.
22	C314_3360	4 309	14/08/24	10389	9639	View looking southwest at northeast corner of Tier II DF
23	C314_3361	4 455	14/08/24	10360	9645	View looking south at north side of Tier II DF. VT-5 visible in center
24	C314_3362	4 409	14/08/24	10338	9651	View looking south at north side of Tier II DF. MW-4 visible in foreground
25	C314_3363	4 151	14/08/24	10319	9649	View looking south at north side of Tier II DF. VT-6 visible in center
26	C314_3364	4 345	14/08/24	10322	9631	View looking east along north toe from northwest corner of facility. Note minor ponding along toe.
27	C314_3365	4 374	14/08/24	10299	9633	View looking east along north toe from northwest corner of facility.
28	C314_3366	4 387	14/08/24	10296	9633	View looking south along west side slope from northwest corner of facility
29	C314_3367	4 354	14/08/24	10284	9594	View looking east at minor erosion on west slope of facility - FEATURE E
30	C314_3368	4 439	14/08/24	10304	9592	View looking west at minor erosion on west side slope of facility - FEATURE E

Table XVIII: LANDFILL VISUAL INSPECTION PHOTO LOG - TIER II DISPOSAL FACILITY (PAGE 2 OF 3)

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
31	C314_3370	4 426	14/08/24	10304	9588	View looking east along south crest of Tier II DF
32	C314_3371	1 494	14/08/24	10307	9589	Panoramic view looking north to southeast across surface from southwest corner of facility.
33	C314_3372	4 346	14/08/24	10309	9587	View looking south at minor erosion on south slope - FEATURE F
34	C314_3373	4 291	14/08/24	10307	9581	View looking north at minor erosion on south slope - FEATURE F
35	C314_3374	4 303	14/08/24	10312	9582	View looking east at sparse vegetation on south side slope of Tier II DF
36	C314_3376	4 311	14/08/24	10303	9583	View looking north at minor depressions below VT-8 on southwest crest of facility - FEATURE B
37	C314_3377	4 376	14/08/24	10290	9592	View looking south at parallel cracks extending along west side slope of Tier II DF - FEATURE G
38	C314_3378	4 266	14/08/24	10289	9587	View of 25cm deep crack on west side slope of Tier II DF.
39	C314_3379	4 458	14/08/24	10289	9576	View looking north at parallel cracks extending along west side slope of Tier II DF - FEATURE G
40	C314_3380	4 349	14/08/24	10279	9572	View looking north along west side slope of Tier II DF
41	C314_3381	4 290	14/08/24	10280	9570	View looking east along south side slope of Tier II DF
42	C314_3382	4 468	14/08/24	10282	9572	View looking northeast at two cracks extending along southwest corner slope - Feature G
43	C314_3383	4 350	14/08/24	10286	9573	View of partially infilled crack extending along southwest corner slope - Feature G
44	C314_3385	4 391	14/08/24	10292	9572	View looking east at numerous parallel cracks extending between 5-7m above toe - FEATURE G
45	C314_3386	4 401	14/08/24	10296	9572	View of crack located on south side slope - FEATURE G
46	C314_3388	4 390	14/08/24	10299	9572	View at crack extending between 3-4m above toe on south side of Tier II DF - FEATURE G
47	C314_3389	4 376	14/08/24	10298	9570	View looking east at numerous parallel cracks and settlement along south central toe of Tier II DF - FEATURE G
48	C314_3390	4 382	14/08/24	10298	9568	View looking east at settlement area along south toe of Tier II DF - FEATURE D
49	C314_3391	4 279	14/08/24	10310	9570	View looking west at numerous parallel cracks along southeast side slope of Tier II DF - FEATURE G
50	C314_3392	4 420	14/08/24	10306	9569	View of large crack along southeast side slope of Tier II DF - FEATURE G
51	C314_3393	4 438	14/08/24	10307	9570	View of large crack along southeast side slope of Tier II DF - FEATURE G
52	C314_3394	4 331	14/08/24	10315	9569	View looking east at upper cracks 8 m above toe - FEATURE G
53	C314_3395	4 357	14/08/24	10319	9569	View looking east at large parallel cracks on mid south side slope - FEATURE G
54	C314_3396	4 298	14/08/24	10319	9567	View of large crack on mid south side slope - FEATURE G
55	C314_3397	4 459	14/08/24	10335	9568	View looking west at numerous parallel cracks along south side slope of Tier II DF - FEATURE G
56	C314_3398	4 425	14/08/24	10336	9563	View looking west at settlement area along south toe of Tier II DF - FEATURE D
57	C314_3399	4 368	14/08/24	10322	9571	View looking southeast at parabolic cracks 5-6 m up from toe, dipping to southeast corner
58	C314_3400	4 440	14/08/24	10357	9561	View looking west at east end of cracks within depression near toe on south side of Tier II DF - FEATURES D and G
59	C314_3401	4 377	14/08/24	10364	9558	View looking west along south toe of Tier II DF. Note areas of depression along toe - Feature D
60	C314_3402	4 259	14/08/24	10364	9560	View looking north along east toe of Tier II DF

Table XVIII: LANDFILL VISUAL INSPECTION PHOTO LOG - TIER II DISPOSAL FACILITY (PAGE 3 OF 3)

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
61	C314_3403	4 351	14/08/24	10362	9560	View of smaller cracks extending up southwest corner slope - FEATURE G
62	C314_3404	4 384	14/08/24	10365	9566	View of partially infilled crack on southeast corner of Tier II DF
63	C314_3405	4 406	14/08/24	10352	9572	View looking east at minor depression on southeast corner slope - FEATURE C
64	C314_3406	4 298	14/08/24	10351	9576	View looking northwest at minor depression on southeast corner slope - FEATURE C
65	C314_3407	4 321	14/08/24	10348	9582	View looking west along south crest of Tier II DF
66	C314_3408	4 301	14/08/24	10349	9583	View looking north along east crest of Tier II DF
67	C314_3409	1 504	14/08/24	10347	9584	Panoramic view looking west to north across surface from southeast corner of facility
68	C314_3410	4 412	14/08/24	10343	9581	View looking south at minor erosion along crest on south side of Tier II DF - FEATURE F
69	C314_3411	4 380	14/08/24	10333	9584	View looking east at small depression on south crest of Tier II DF - FEATURE C (new)
70	C314_3412	4 348	14/08/24	10329	9585	View looking south at parallel areas of minor erosion of south side slope of facility - FEATURE F
71	C314_3413	4 316	14/08/24	10353	9610	View looking south along east crest of Tier II DF
72	C314_3414	4 393	14/08/24	10352	9611	View looking west along north crest of Tier II DF
73	C314_3415	4 347	14/08/24	10346	9614	View looking east at small depression on northeast corner of Tier II DF - FEATURE A (new)
74	C314_3416	4 321	14/08/24	10339	9609	View looking west at small depression on northeast cover of Tier II DF - FEATURE A
75	C314_3417	4 378	14/08/24	10308	9617	View looking east along north crest of Tier II DF
76	C314_3418	4 429	14/08/24	10307	9617	View looking south along west crest of Tier II DF
77	C314_3419	1 433	14/08/24	10309	9616	Panoramic view looking west to southwest across surface from northwest corner of facility.
78	C314_3420	4 312	14/08/24	10306	9605	View looking north at linear depression on northwest crest of Tier II DF - FEATURE B
79	C314_3421	4 387	14/08/24	10370	9623	View south at minor depression on northeast toe - FEATURE A
80	C314_3422	4 388	14/08/24	10364	9612	View north at minor depression on northeast slope - FEATURE A
Soil Sampling						
MW-4	C314_3057	4 317	14/08/24	10335	9643	Sampling location 4W located upgradient of Tier II DF
4W	C314_3058	4 406	14/08/24	10336	9645	View south at MW-4 soil sample location
MW-5	C314_3060	4 313	14/08/24	10297	9565	Sampling location 5W located downgradient of Tier II DF
5W	C314_3061	4 383	14/08/24	10293	9563	View looking northeast at MW-5 sample location
MW-6	C314_3062	4 332	14/08/24	10325	9552	Sampling location 6W located downgradient of Tier II DF
6W	C314_3063	4 349	14/08/24	10321	9549	View looking northeast at MW-6 sample location
MW-7	C314_3064	4 326	14/08/24	10370	9561	Sampling location 7W located downgradient of Tier II DF
7W	C314_3065	4 311	14/08/24	10374	9562	View looking southwest at MW-7 sample location

6.5 THERMISTOR ANNUAL MAINTENANCE REPORTS

All thermistors at the Tier II Disposal Facility were inspected and found to be in good condition with no significant concerns identified. Data from all thermistors was successfully retrieved.

Batteries were replaced in all datalogger units as specified in the TOR. Internal memories were reset and clocks were synchronized using the Prolog software. Manual resistive readings were collected from the thermistor strings as per the TOR. Manual readings and inspection results for each thermistor are presented on the Thermistor Annual Maintenance Reports (VT-5 to VT-8) included in this section.

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-5**		Inclination		**Vertical**		
Install Date:	**2007-08-18**		First Date Event		**2008-08-05**	Last Date Event	**2012-08-22**
Coordinates and Elevation		N	**9610.4**	E	**10348.5**	Elev	**43.7**
Length of Cable (m)	**9.5**		Cable Lead Above Ground (m)	**3.2**	Nodal Points		**13**
Datalogger Serial #	**02020218**				Cable Serial Number		

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date	**2012-08-22 (New)**			
Battery Levels	Main **11.34** (0.0 prior to change)		Aux **13.14** (15.45 prior to change)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	12.994	4.2957	9	21.39	-5.289
2	14.368	2.5965	10	22.34	-6.1081
3	15.098	1.6309	11	23.25	-6.9205
4	16.076	0.4214	12	24.03	-7.6106
5	16.972	-0.6745	13	24.66	-8.2358
6	17.879	-1.656	-	-	-
7	19.179	-3.0219	-	-	-

Observations and Proposed Maintenance

Error in time clock reported when connected to site computer. Replace ULB-1 and complete download.
Download file: Site_005_VT-5_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-6**		Inclination		**Vertical**		
Install Date:	**2007-08-18**		First Date Event		**2008-08-05**	Last Date Event	**2012-08-22**
Coordinates and Elevation		N	**7615.4**	E	**10315.6**	Elev	**44**
Length of Cable (m)	**9.3**	Cable Lead Above Ground (m)	**3.2**		Nodal Points		**13**
Datalogger Serial #	**02020219**				Cable Serial Number		

Thermistor Inspection

	Good: Yes	Good: No	Problem/Maintenance
Casing	x		
Cover	x		
Data Logger	x		
Cable	x		
Beads	x		

Battery Installation Date: **2012-08-22 (New)**

Battery Levels: Main **11.34** (11.34 prior to change) Aux **13.58** (13.02 prior to change)

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	12.705	4.4729	9	21.22	-5.177
2	14.194	2.5589	10	22.4	-6.1919
3	14.905	1.5781	11	23.3	-6.9616
4	15.841	0.6285	12	24.22	-7.7683
5	16.749	-0.4939	13	24.92	-8.3253
6	17.799	-1.6996	-	-	-
7	19.046	-2.9596	-	-	-

Observations and Proposed Maintenance

Download file: Site_006_VT-6_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-7**		Inclination		**Vertical**		
Install Date:	**2007-08-18**		First Date Event		**2008-08-05**	Last Date Event	**2012-08-22**
Coordinates and Elevation	N	**9588.2**	E	**10307**	Elev	**43.1**	
Length of Cable (m)	**10.4**	Cable Lead Above Ground (m)	**3.2**	Nodal Points			**15**
Datalogger Serial #	**02020360**			Cable Serial Number			

Thermistor Inspection

	Good: Yes		Good: No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date	**2012-08-22 (New)**			
Battery Levels	Main **11.34** (11.34 prior to change)		Aux **13.38** (13.02 prior to change)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.598	6.9865
2	13.998	2.9918
3	14.697	1.9699
4	15.596	0.7724
5	16.548	-0.3668
6	15.197	-0.6185
7	18.725	-2.6665

Bead	ohms	Degrees C
9	21.01	-5.0065
10	22,00	-5.9193
11	23.01	-6.8004
12	23.84	-7.5277
13	24.66	-8.2554
14	25.33	-8.7353
15	25.79	-9.0972

Observations and Proposed Maintenance

Download file: Site_007_VT-7_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-8**	Inclination		**Vertical**			
Install Date:	**2007-08-17**	First Date Event		**2008-08-05**	Last Date Event		**2012-08-22**
Coordinates and Elevation	N	**9583.7**	E	**10307.5**	Elev	**43.3**	
Length of Cable (m)	**10.3**	Cable Lead Above Ground (m)	**3.3**	Nodal Points			**15**
Datalogger Serial #	**02120062**			Cable Serial Number			

Thermistor Inspection

	Good: Yes		Good: No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date	**2012-08-22 (New)**			
Battery Levels	Main **11.34** (11.34 prior to change)		Aux **13.02** (12.53 prior to change)	

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	11.905	5.5756	9	20.94	-4.8497
2	13.997	2.9318	10	22.06	-5.8681
3	14.777	1.9924	11	23.01	-6.694
4	15.813	0.7068	12	23.88	-7.4422
5	16.728	-0.4151	13	24.6	-8.0601
6	17.582	-1.3894	14	25.18	-8.5552
7	18.783	-2.6224	15	25.88	-9.0972
8	19.91	-3.8365	-	-	-

Observations and Proposed Maintenance

Download file: Site_008_VT-8_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

6.6 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Tier II Disposal Facility samples are presented in Table XIX 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 XIX: Tier II Summary Table for Soil Analytical Data

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C314-4WA	MW-4	0-15	4.6	0.01	11.1	3.4	5.2	5.8	6.5	9	<0.01	<0.1	<10	<50	<50
C314-4WB		40-50	3.7	<0.01	10.3	2.9	4.5	5.0	5.5	8	<0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-5WA	MW-5	0-15	4.0	0.03	21.3	5.2	7.7	8.9	11.8	12	<0.01	<0.1	<10	<50	<50
C314-5WB		40-50	4.2	0.03	23.9	5.2	8.7	9.1	12.9	14	<0.01	<0.1	<10	<50	<50
C314-6WA	MW-6	0-15	3.0	0.07	17.4	3.7	5.8	<4.9	8.6	10	<0.01	<0.1	<10	<50	<50
C314-6WB		40-50	5.4	0.13	17.4	4.1	6.8	<4.9	8.5	12	<0.01	<0.1	<10	<50	<50
C314-7WA	MW-7	0-15	5.9	0.01	11.8	3.5	4.8	5.3	6.3	7	<0.01	<0.1	<10	<50	<50
C314-7WB		40-50	5.6	0.02	11.6	3.4	4.0	<4.9	6.7	9	0.01	<0.1	<10	<50	<50

6.7 GROUNDWATER SAMPLE ANALYTICAL DATA

Although requested in the Chains of Custody, Exova did not perform the mercury analysis on groundwater samples. The groundwater chemical analysis results and evaluation for the analytical data for the 2014 Tier II Disposal Facility samples are presented in Table XX 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 XX: Tier II Summary Table for Groundwater Analytical Data

Sample #	Location	Parameters												
		As [mg/L]	**Cd** [mg/L]	**Cr** [mg/L]	**Co** [mg/L]	**Cu** [mg/L]	**Pb** [mg/L]	**Ni** [mg/L]	**Zn** [mg/L]	**Hg** [mg/L]	**PCBs** [ug/L]	**F1** C_6-C_{10} [mg/L]	**F2** C_{10}-C_{16} [mg/L]	**F3** C_{16}-C_{34} [mg/L]
Detection Limit		0.0002	0.00001	0.0005	0.0001	0.001	0.0001	0.0005	0.001	0.000005	0.1	0.2	0.1	0.1
Upgradient Groundwater Samples														
C314-4W	MW-4	- Well Dry -												
Downgradient Groundwater Samples														
C314-5W	MW-5	0.0010	0.00010	0.0130	0.0046	0.010	0.0008	0.0265	1.650	N/A	<0.1	<0.2	<0.2	<0.1
C314-6W	MW-6	- Well Dry -												
C314-7W	MW-7	0.0011	0.00021	0.0081	0.0016	0.005	0.0007	0.0098	0.966	N/A	<0.1	<0.2	<0.2	<0.1

N/A: Although requested in the Chains of Custody, Exova did not perform the mercury analysis on groundwater samples

6.8 MONITORING WELL SAMPLING / INSPECTION LOGS

The monitoring well sampling logs for MW-4 to MW-7 are presented in this section.

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-22	Time:	14:20
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-4		
Sample Number:	N/A (dry)		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	53		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	348		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	48		
Depth to water surface (cm)= (from top of pipe)	N/A	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	N/A		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	206	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	N/A		
Static volume of water in well (mL)=	N/A		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	N	Purging/Sampling Equipment:	N/A
Volume Purged Water=	N/A		
Decontamination required: (Y/N)	N/A		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	N/A		
Final Conductivity (uS/cm)=	N/A		
Final Temperature (degC)=	N/A		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-23	Time:	14:10
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-5		
Sample Number:	C314-5W		
Condition of Well:	Fair	Unable to secure protective cover due to well heaving	
Measured Data			
Well pipe height above ground	75	Well has heaved ~ 27 cm since 2010.	
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	340		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	40		
Depth to water surface (cm)= (from top of pipe)	115	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	40		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	177	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	62		
Static volume of water in well (mL)=	779		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra Tubing, Foot Valve
Volume Purged Water=	800 mL		
Decontamination required: (Y/N)	N, dedicated		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	7.5		
Final Conductivity (uS/cm)=	3680		
Final Temperature (degC)=	2.1		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-22	Time:	14:30
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-6		
Sample Number:	N/A	Insufficient Sample Volume	
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	61		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	400		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	51		
Depth to water surface (cm)= (from top of pipe)	123	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	62		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	126	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	3		
Static volume of water in well (mL)=	38		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	N	Purging/Sampling Equipment:	N/A
Volume Purged Water=	N/A		
Decontamination required: (Y/N)	N/A		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	N/A		
Final Conductivity (uS/cm)=	N/A		
Final Temperature (degC)=	N/A		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-23	Time:	14:50
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-7		
Sample Number:	C314-5W		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	51		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	342		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	42		
Depth to water surface (cm)= (from top of pipe)	132	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	81		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	189	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	57		
Static volume of water in well (mL)=	716		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra Tubing, Foot Valve
Volume Purged Water=	750 mL		
Decontamination required: (Y/N)	N, dedicated		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	7.8		
Final Conductivity (uS/cm)=	2760		
Final Temperature (degC)=	1.8		

7 NORTHEAST LANDFILL

7.1 SUMMARY

On August 23, 2014 soil sampling and a visual inspection were completed at the Northeast Landfill.

PCB or relatively high metal concentrations were not detected in the collected soil samples. Detectable TPH concentrations (PHC Fraction F3) were detected at surface in upgradient sample location C3-11 (70 mg/kg) and at surface and depth samples collected at downgradient sample location C3-17 (114 mg/kg and 61 mg/kg, respectively). All other TPH fraction F-3 concentrations were below the method detection limit.

As of the 2014 monitoring event, no features were identified with “unacceptable” severity ratings. One settlement feature was identified with a “significant” severity rating on the South side of Lobe G. Occasional areas of minor settlement and erosion were observed on the landfill surface and side slopes of Lobes B and C. One area of minor staining was also noted on the east toe of Lobe A.

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

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table XXI of this report.

Table XXI: Visual Inspection Checklist / Report – Northeast Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST

INSPECTION REPORT – PAGE 1 of 4

SITE NAME: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: Northeast Landfill (Regrade Landfill)
DATE OF INSPECTION: August 23, 2014
DATE OF PREVIOUS INSPECTION: August 21-23, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 6
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 XXI: NORTHEAST LANDFILL VISUAL INSPECTION (PAGE 2 OF 4)

Site Name: CAM-3 Shepherd Bay
Landfill: Northeast Landfill
Designation: Regrade Landfill
Date Inspected: August 23, 2012
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature:

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.6 (Lobe A - N, E sides)	0.3 - 3.5 m	0.15 - 1 m	0.05 - 0.15 m	Occasional	One moderate and four minor surface depressions	NELF-4, 6-8, 11, 15, 16	Acceptable	Moderate depression on southeast side slope and minor depressions on north and east crests. No significant change from previous observation.
		FEATURE B See Figure CAM-3.6 (Lobe B - SW cover)	4 m	0.4 m	0.1 m	Isolated	Subtle surface depression	NELF-31, 32		Minor linear depression on southwest cover. No significant change from previous observation.
		FEATURE C See Figure CAM-3.6 (Lobe C - W, NW sides) - 2 New Obs.	0.3 - 5 m	0.2 - 2 m	0.1-0.15 m	Occasional	Six minor to moderate sized surface depressions	NELF-47, 54, 56, 59		Several small potholes on west and southeast corner of lobe. Moderate sized depression adjacent to ponded area on west side slope.
		FEATURE D See Figure CAM-3.6 (Lobe C - SE side)	0.3 m	0.2 - 0.4 m	0.1 m	Isolated	Two minor surface depressions	NELF-45		Minor depressions on southeast side slope of lobe. No significant change from previous observation.
		FEATURE E See Figure CAM-3.6 (Lobe D - N, S sides) 2 New Obs.	0.3 - 3 m	0.25 - 0.5 m	0.05 m	Occasional	Seven minor surface depressions	NELF-74-76, 82, 83, 87		Minor depressions on northwest, northeast and southeast corners.
		FEATURE F See Figure CAM-3.6 (Lobe E - SW corner)	0.5 - 5 m	0.15 - 1 m	0.03 - 0.1 m	Occasional	Minor surface depressions	NELF-88-91		Minor linear and pothole-type depressions on southwest corner. No significant change from previous observation.
		FEATURE G See Figure CAM-3.6 (Lobe E - SE Side)	2 - 30 m	0.4 - 20 m 0.3 m	0.1 - 0.8 m	Occasional (3%)	Large bowl shaped depression and small linear depression on southeast area of lobe	NELF-92, 93, 96, 98		Large bowl shaped depression adjacent to former ponded area on south side of lobe. Consistent with 2012 observations.
		FEATURE H See Figure CAM-3.6 (Lobe E - N cover and W side) - 1 New Obs.	0.5 - 5 m	0.1 - 0.7 m	0.05 - 0.25 m	Occasional (<2%)	Six linear surface depressions	NELF-104, 105, 110, 111		Minor linear depressions on north cover and west side.
		FEATURE I See Figure CAM-3.6 (Lobe G - S side)	5 m	1 - 2 m	0.1 - 0.2 m	Isolated	Settlement of fines in regraded area	NELF-132-134	Significant	It would appear area has been regraded with fine sand and coarse gravel/cobbles since last observation. Settlement of sand has occurred at surface resulting in holes in cover.
		FEATURE K See Figure CAM-3.6 (Lobe G - N and NW side) - 1 New Obs.	0.3 - 4 m	0.15- 0.4 m	0.1 m	Isolated	Linear and oval shaped surface depressions	NELF-165-167		Minor depressions on side slopes.
		FEATURE L See Figure CAM-3.6 (Lobe H - N side)	0.3 - 2 m	0.2 m	0.1 m	Occasional	Minor surface depressions	NELF-196-198		Three minor depressions along crest on north side of lobe. No significant change from previous observation.
		FEATURE AA See Figure CAM-3.6 (Lobe F - N side) - New Obs.	1 m	0.3 m	0.1 m	Isolated	Minor surface depression	NELF-113		Minor depression on north side slope.

TABLE XXI: NORTHEAST LANDFILL VISUAL INSPECTION (PAGE 3 OF 4)

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Erosion	Yes	FEATURE M See Figure CAM-3.6 (Lobe A - N, W sides)	0.6 - 3 m	0.2 - 0.6 m	0.05 - 0.1 m	Occasional (5% of Lobe)	Minor surface erosion on north and west side slopes	NELF-12, 17, 18	Acceptable	Numerous locations extending along west and north sides of Lobe A and north, east and west sides of Lobe B. The erosion is the result of fines washing. Cover appears stable. Consistent with 2012 observations.
		FEATURE N See Figure CAM-3.6 (Lobe B - N, W, E sides) - 2 New Obs.	3 - 5 m	0.1 - 1 m	0.01 - 0.1 m	Occasional (3% of Lobe)	Minor surface erosion on side slopes	NELF-23, 24, 33, 35-38, 40		
		FEATURE O See Figure CAM-3.6 (Lobe C - NW, SW sides) .	3 - 8 m	0.2 - 0.5 m	0.05 - 0.1 m	Isolated	Minor surface erosion	NELF-46, 57, 58		Minor erosion on northwest and southwest side slopes of lobe. Consistent with 2012 observations.
		FEATURE J See Figure CAM-3.6 (Lobe D - N side) - New Obs.	4 m	0.3 m	0.01 - 0.02 m	Isolated	Minor surface erosion	NELF-78, 79		Minor erosion, washing of fines.
		FEATURE P See Figure CAM-3.6 (Lobe E - E side)	4 - 5 m	0.3 - 0.7 m	0.02 - 0.03 m	Isolated	Minor surface erosion on east side of lobe	NELF-101-103		Minor erosion, washing of fines. Consistent with 2012 observations.
		FEATURE Q See Figure CAM-3.6 (Lobe G - SE cover) - 1 New Obs.	15 - 20 m	0.3 - 1 m	0.02 - 0.03 m	Isolated	Two areas of surface erosion on southeast cover of lobe	NELF-187-190		Minor erosion, washing of fines.
		FEATURE QQ See Figure CAM-3.6 (Lobe G - SW cover) - New Obs.	2 - 5 m	0.1 - 0.2 m	0.02 - 0.1 m	Occasional	Three areas of minor erosion on southwest area side slopes	NELF-131, 136, 139, 154, 155		Minor erosion, washing of fines.
		FEATURE R See Figure CAM-3.6 (Lobe G - N side)	2 m	0.7 m	0.02 - 0.03 m	Isolated	Minor surface erosion on north side slope	NELF-175		Minor erosion, washing of fines. Consistent with 2012 observations.
		FEATURE S See Figure CAM-3.6 (Lobe H - NE cover and side) 1 New Obs.	2 - 4 m	0.1 - 1 m	0.02 - 0.03 m	Isolated	Minor surface erosion on northeast cover and side of lobe	NELF-193, 194, 200		Minor erosion, washing of fines.
Frost Action	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	See Other Features of Note below.
Animal Burrows	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Vegetation	Yes	Lobes A, B, C, D, E and G	N/A	N/A	N/A	Very sparse	N/A	NELF-9, 28, 50, 157	N/A	N/A

TABLE XXI: NORTHEAST LANDFILL VISUAL INSPECTION (PAGE 4 OF 4)

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Staining	Yes	FEATURE T See Figure CAM-3.6 (Lobe C - NW toe)	3 m	0.5 m	Unknown	N/A	N/A	NELF-63	Not Observable	Not observed at time of inspection.
		FEATURE U See Figure CAM-3.6 (Lobe D - N cover)	0.3 m	0.2 - 0.3 m	Unknown	Isolated	Two isolated areas of dark staining	NELF-77	Acceptable	Two small areas of dark staining on north end of lobe. Consistent with 2012 observations.
		FEATURE V See Figure CAM-3.6 (Lobe G - SE cover) - 2 New Obs.	0.2 - 2 m	0.25 - 0.7 m	Unknown	Isolated	Isolated dark staining on southeast cover and two rust coloured stains on west toe	NELF-146, 149, 185	Acceptable	Area of dark staining on southeast area of lobe.
Vegetation Stress	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	None	N/A	N/A	Not Observable	N/A
Other Features of Note:	Yes	FEATURE W See Figure CAM-3.6 (Lobe B)	5 m	1 - 2 cm	Unknown	Isolated	Partially infilled crack	NELF-15, 16	Acceptable	Crack extends across southwest cover of lobe. Consistent with 2012 observations.
		FEATURE X See Figure CAM-3.6 (Lobes B & F)	3 - 6 m	4 - 5 m	5 - 25 cm	Isolated	Disturbed areas on side slopes	NELF-21, 22, 86 to 89	Acceptable	Three disturbed areas on side slopes resulting from on-site NWS activity (first noted in 2011 assessment). Recently regraded.
		FEATURE Y See Figure CAM-3.6 (Lobe C - N, W crests)	2 18 m	3 - 10 mm	Unknown	Isolated	Single and parallel tension cracks	NELF-48-51, 53-55, 60, 61, 63-65, 67, 68	Acceptable	Partially infilled cracks extending along west and north crests of lobe. Crack widths appears to have increased from 2012 observations.
		FEATURE Za See Figure CAM-3.6 (Lobe G - S side)	15 - 25 m	7	up to 35 cm	N/A	Area has recently been regraded	NELF-129, 138	N/A	Area has been regraded/repaired. No cracks visible.
		FEATURE Zb See Figure CAM-3.6 (Lobe G - W side)	4 - 18 m	1 - 10 cm	Unknown	Isolated	Partially infilled cracks extending across west side slope of lobe (4 locations)	NELF-142-145, 150-153, 156-162	Acceptable	Single (3) and parallel (1) cracks extending at various angles along west side slope. Consistent with 2012 observations. Marginal increase in crack widths.
		FEATURE Zc See Figure CAM-3.6 (Lobe G - NE cover and side)	20 m	2 - 8 mm	Unknown	Isolated	Infilled crack extending across northeast cover (1 location)	NELF-177, 178, 180	Acceptable	Only 1 location visible. Two previous locations assumed to be completely infilled.
		See Figure CAM-3.6 (Lobe G - NE cover)	3 - 5 m	0.6 m	5 - 7 cm	Isolated	Several vehicle ruts	NELF-176	Acceptable	No change from 2012 inspection.
Additional Photos	Yes	See Figure CAM-3.6 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

7.2 PRELIMINARY STABILITY ASSESSMENT

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

Table XXII: Preliminary Stability Assessment – Northeast Landfill

Feature	Severity Rating	Extent
Settlement	Acceptable (1 Significant)	Occasional
Erosion	Acceptable	Occasional
Frost Action	Not observed	None
Staining	Acceptable	Isolated
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, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of landfill is compromised to the extent that ability to contain waste materials is compromised. Examples may include: • Debris exposed in erosion channels or areas of differential settlement. • Liner exposed. • Slope failure.

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

7.3 LOCATION PLAN

The Location Plan for the Northeast Landfill has been completed as per the TOR and is presented in Figures CAM-3.6a and CAM-3.6b.

10 300 E

10 400 E

10 500 E

TO STATION AREA

ACCESS ROAD

FEATURE W
CRACK

SPARSE VEGETATION

S13 C3–13

S14 C3–14

FEATURE B
SETTLEMENT

FEATURE N
6 x EROSION

FEATURE M
9 x EROSION

FEATURE A
3 x SETTLEMENT

FEATURE A
2 x SETTLEMENT

FEATURE X
DISTURBED AREA

C3–12

S12

TBM208

A

B

FEATURE C
4 x SETTLEMENT

S15 C3–15

FEATURE O
EROSION

FEATURE T
FORMER STAINING

MINOR PONDING

FEATURE I
SETTLEMENT

FEATURE C
2 x SETTLEMENT

FEATURE O
EROSION

FEATURE Y
CRACKS

FEATURE D
2 x SETTLEMENT

C

D

FEATURE E
7 x SETTLEMENT

FEATURE J
EROSION

FEATURE U
2 x STAINING

S9

FEATURE F
3 x SETTLEMENT

3 x SETTLEMENT

FEATURE H
6 x SETTLEMENT

FEATURE P
2 x EROSION

E

FEATURE G
2 x SETTLEMENT

C3–11

S11

SPARSE VEGETATION

LEGEND

- TBM208 — TEMPORARY BENCHMARK
- MONITORING SOIL SAMPLE LOCATION
- 1 — PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- DISTURBED AREA (NTS)
- EROSION (NTS)
- CRACK (NTS)
- STAINING
- PONDING
- SPARSE VEGETATION

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15–04–27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

NORTHEAST LANDFILL

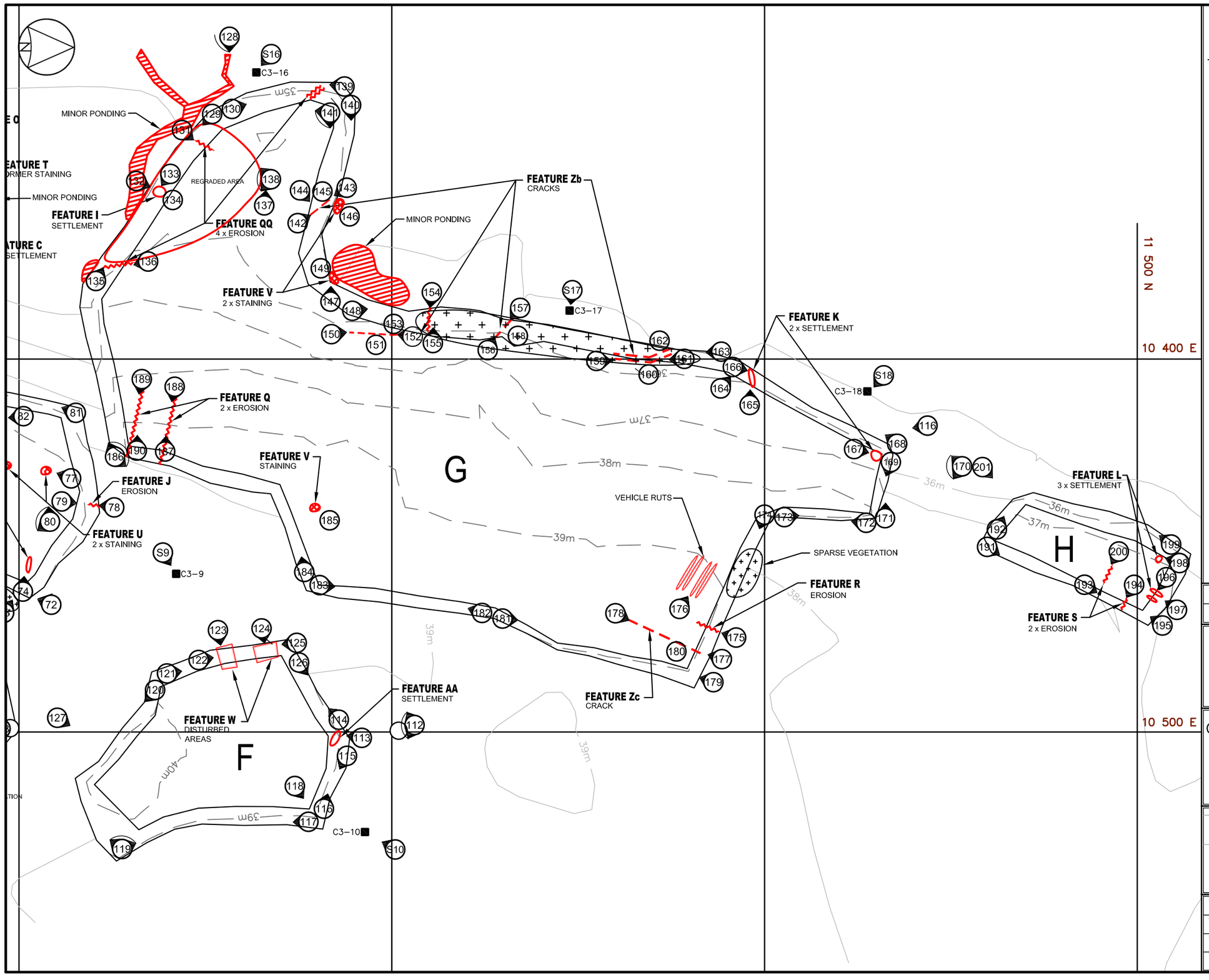
SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,000	APRIL 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. ENG
PROJECT NO: CD2656_004_160	DRAWING NO: CD2656_004_160_101-CAM-3_6	PAGE PL1

FIGURE CAM-3.6a

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_6.dwg, PL1, 2015-04-27 8:49:50 AM



LEGEND

- TBM208 — TEMPORARY BENCHMARK
- MONITORING SOIL SAMPLE LOCATION
- 1 — PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- DISTURBED AREA (NTS)
- EROSION (NTS)
- CRACK (NTS)
- STAINING
- PONDING
- SPARSE VEGETATION

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15–04–27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

NORTHEAST LANDFILL

SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,000	APRIL 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. ENG
PROJECT NO:	DRAWING NO:	PAGE
CD2656_004_160	CD2656_004_160_101-CAM-3_6	PL2

FIGURE CAM-3.6b

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_6.dwg, PL2, 2015-04-27 8:49:26 AM

7.4 PHOTOGRAPHIC RECORDS

The Photographic Record for Northeast Landfill has been completed as per the TOR and is included as Table XXIII hereafter. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XXIII: Landfill Visual Inspection Photo Log – Northeast Landfill (page 1 of 9)

Site Name: CAM-3, Shepherd Bay
Landfill: Northeast Landfill
Date Inspected: August 23, 2012
Inspected by: Andrew Passalis, P.Eng.

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe A						
1	C314_3067	1 372	14/08/23	10747	11913	Panoramic view looking northwest to east from south of Lobe A
2	C314_3068	4 409	14/08/23	10752	11889	View looking northeast along south side of Lobe A
3	C314_3069	4 329	14/08/23	10754	11891	View looking southwest along south side of Lobe A
4	C314_3070	4 417	14/08/23	10760	11873	View looking north-northeast along east side of Lobe A. Note large depression on side slope - FEATURE A
5	C314_3071	4 328	14/08/23	10759	11875	View looking southwest along south side of Lobe A
6	C314_3072	4 408	14/08/23	10774	11869	View of large depression on south side slope of Lobe A - FEATURE A
7	C314_3073	4 391	14/08/23	10783	11869	View looking southwest at depression on south crest of Lobe A - FEATURE A
8	C314_3074	4 327	14/08/23	10794	11867	View looking south-southwest at depression on east cover - FEATURE A
9	C314_3076	4 432	14/08/23	10806	11863	View looking northwest along north side of Lobe A
10	C314_3077	4 332	14/08/23	10804	11863	View looking south along east side of Lobe A
11	C314_3078	4 391	14/08/23	10813	11875	View looking north at minor erosion - FEATURE M and depression on north side slope - FEATURE A
12	C314_3079	4 297	14/08/23	10822	11873	View looking south at minor erosion and depression on north side slope - FEATURE M
13	C314_3080	4 342	14/08/23	10823	11889	View looking east along north side of Lobe A
14	C314_3081	4 256	14/08/23	10825	11884	View looking south along west side of Lobe A
15	C314_3082	4 405	14/08/23	10827	11889	View looking southeast at depression on northwest corner of Lobe A - FEATURE A
16	C314_3083	4 264	14/08/23	10819	11890	View looking northeast at depression on northwest corner of Lobe A - FEATURE A
17	C314_3084	4 379	14/08/23	10807	11898	View looking east at minor erosion on west slope of Lobe A - FEATURE M
18	C314_3085	4 383	14/08/23	10805	11886	View looking west at minor erosion on west slope of Lobe A - FEATURE M
19	C314_3086	1 201	14/08/23	10815	11884	Panoramic view looking south to northeast across cover of Lobe A

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (PAGE 2 OF 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe B						
20	C314_3087	970 KB	14/08/23	10867	11889	Panoramic view looking northeast to south across cover from northeast corner of Lobe B
21	C314_3091	4 406	14/08/23	10859	11884	View looking west at disturbed area on northeast side slope of Lobe B - FEATURE X
22	C314_3092	4 307	14/08/23	10855	11888	View looking north at disturbed area on northeast side slope of Lobe B - FEATURE X
23	C314_3093	4 401	14/08/23	10842	11895	View east a minor erosion on east side slope of Lobe B - FEATURE N (new)
24	C314_3094	4 337	14/08/23	10840	11885	View west a minor erosion on east side slope of Lobe B - FEATURE N (new)
25	C314_3095	4 436	14/08/23	10827	11899	View looking north along east side of Lobe B
26	C314_3096	4 202	14/08/23	10827	11901	View looking west along south side of Lobe B
27	C314_3097	1 166	14/08/23	10832	11916	Panoramic view looking northwest to northeast across surface from mid-south side of Lobe B
28	C314_3098	1 070	14/08/23	10848	11941	Panoramic view looking north to east-southeast across surface from southwest corner of Lobe B
29	C314_3099	4 317	14/08/23	10853	11943	View looking south at partially infilled cracks extending towards southwest corner of Lobe B - FEATURE W
30	C314_3100	4 304	14/08/23	10849	11946	View of infilled crack extending on southwest corner of Lobe B - FEATURE W
31	C314_3103	4 326	14/08/23	10852	11938	View looking east at linear depression on southwest cover of Lobe B - FEATURE B
32	C314_3104	4 285	14/08/23	10846	11934	View looking north at linear depression on southwest cover of Lobe B - FEATURE B
33	C314_3105	4 431	14/08/23	10859	11952	View looking east at erosion on west side slope of Lobe B - FEATURE N
34	C314_3108	4 413	14/08/23	10865	11959	View looking southeast along former drainage channel extending from southwest side of Lobe B.
35	C314_3109	4 364	14/08/23	10868	11950	View looking east at minor erosion (washing of fines) on west side slope of Lobe B - FEATURE N
36	C314_3110	4 308	14/08/23	10873	11951	View looking southeast at minor erosion (washing of fines) on west side slope of Lobe B - FEATURE N
37	C314_3111	4 379	14/08/23	10884	11943	View looking southeast at minor erosion on north side of Lobe B - FEATURE N
38	C314_3112	4 356	14/08/23	10878	11937	View looking northwest at minor erosion on north side of Lobe B - FEATURE N
39	C314_3113	4 290	14/08/23	10889	11933	View looking east-southeast along north side of Lobe B.
40	C314_3114	4 317	14/08/23	10890	11924	View looking south at minor erosion on north side of Lobe B - FEATURE N
41	C314_3115	736	14/08/23	10905	11941	Panoramic view looking east to south from northwest of Lobe B

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 3 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe C						
42	C314_3116	3 992	14/08/23	10908	11941	View looking northeast from southwest of Lobe C
43	C314_3119	4 420	14/08/23	10931	11898	View looking north along east side of Lobe C
44	C314_3120	4 412	14/08/23	10930	11901	View looking west along south side of Lobe C
45	C314_3121	4 296	14/08/23	10948	11898	View looking south at pothole depressions on southeast side of Lobe C - FEATURE D
46	C314_3122	4 273	14/08/23	10926	11925	View looking north-northeast at minor erosion on southwest corner of Lobe C - FEATURE O
47	C314_3123	4 387	14/08/23	10945	11927	View looking southwest at pothole depression on southwest corner of Lobe C - FEATURE C (new)
48	C314_3124	4 378	14/08/23	10931	11929	View looking north at infilled crack on southwest corner of the Lobe C - FEATURE Y
49	C314_3125	4 404	14/08/23	10939	11927	View of partially infilled crack on southwest corner of the Lobe C - FEATURE W
50	C314_3126	4 388	14/08/23	10953	11930	View looking northwest at second infilled crack on southwest corner of the Lobe C - FEATURE Y
51	C314_3127	4 317	14/08/23	10958	11928	View of second partially infilled crack on southwest corner of the Lobe C - FEATURE Y
52	C314_3128	4 348	14/08/23	10937	11934	View looking north along west side of Lobe C
53	C314_3129	4 323	14/08/23	10953	11935	View looking north at partially infilled crack on west side of Lobe C - FEATURE Y
54	C314_3131	4 396	14/08/23	10967	11930	View looking south at two potholes on west crest of Lobe C - FEATURE C. Also single crack below crest - FEATURE Y
55	C314_3132	4 318	14/08/23	10970	11935	View looking south at crack extending along west crest of Lobe C - FEATURE Y
56	C314_3134	4 285	14/08/23	10970	11939	View looking south at settlement along west side slope of Lobe C - FEATURE C
57	C314_3137	4 315	14/08/23	10979	11938	View looking east at minor erosion on west side slope of Lobe C - FEATURE O
58	C314_3138	4 328	14/08/23	10976	11929	View looking west at minor erosion on west side slope of Lobe C - FEATURE O
59	C314_3139	4 348	14/08/23	10989	11928	View looking south at pothole depression on northwest cover of Lobe C - FEATURE C (new)
60	C314_3140	4 303	14/08/23	10980	11932	View looking northeast at start of partially infilled crack on northwest corner of Lobe C - FEATURE Y
61	C314_3141	4 365	14/08/23	10983	11929	View of partially infilled crack on northwest corner of Lobe C - FEATURE Y
62	C314_3142	4 383	14/08/23	10986	11921	View looking north at pothole on northwest side slope of Lobe C - FEATURE C (new)
63	C314_3143	4 383	14/08/23	10990	11934	View east at former stained area on northwest corner of Lobe C
64	C314_3144	4 408	14/08/23	10987	11917	View looking west at partially infilled crack on northwest side of Lobe C - FEATURE Y
65	C314_3145	4 312	14/08/23	10991	11919	View of partially infilled crack on northwest side of Lobe C - FEATURE Y
66	C314_3146	4 353	14/08/23	10993	11923	View looking northwest at ponding adjacent to northwest toe of Lobe C
67	C314_3147	4 389	14/08/23	10994	11912	View looking southwest at parallel cracks extending across north side slope of Lobe C - FEATURE Y
68	C314_3148	4 309	14/08/23	10991	11913	View of parallel cracks extending across north side slope of Lobe C - FEATURE Y
69	C314_3149	4 341	14/08/23	10989	11905	View looking south along east side of Lobe C
70	C314_3150	4 317	14/08/23	10985	11904	View looking west across north side of Lobe C
71	C314_3151	1 193	14/08/23	10979	11921	Panoramic view looking south to northwest across cover from northeast corner of Lobe C

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 4 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe D						
72	C314_3284	4 386	14/08/23	11016	11819	View looking south along east side of Lobe D
73	C314_3285	4 376	14/08/23	11006	11819	View looking northwest along north side of Lobe D
74	C314_3286	4 295	14/08/23	11009	11824	View looking west at linear depression on northeast corner of Lobe D - FEATURE E
75	C314_3287	4 397	14/08/23	11000	11824	View looking west at small depression on northeast crest of Lobe D - FEATURE E
76	C314_3288	4 352	14/08/23	10996	11830	View looking north at small depression on northeast crest of Lobe D - FEATURE E
77	C314_3289	4 144	14/08/23	11022	11851	View looking south at two small stained areas on north surface of Lobe D - FEATURE U
78	C314_3290	4 278	14/08/23	11032	11844	View looking south at minor erosion on north side slope of Lobe D - FEATURE J (new)
79	C314_3291	4 329	14/08/23	11021	11846	View looking north at minor erosion on north side slope of Lobe D - FEATURE J (new)
80	C314_3292	1 211	14/08/23	11016	11841	Panoramic view looking southeast to southwest across surface from north side of Lobe D
81	C314_3293	4 320	14/08/23	11023	11870	View looking south along west side of Lobe D
82	C314_3294	4 391	14/08/23	11009	11869	View looking south at two potholes on west side of Lobe D - FEATURE E
83	C314_3295	4 378	14/08/23	10940	11868	View looking E at depression on south crest of Lobe D - FEATURE E
84	C314_3296	4 411	14/08/23	10928	11874	View looking north along west toe of Lobe D
85	C314_3297	4 447	14/08/23	10926	11871	View looking W along south toe of Lobe D
86	C314_3298	4 345	14/08/23	10929	11857	View looking north along east side of Lobe D
87	C314_3299	4 414	14/08/23	10929	11864	View looking southeast two depressions on south slope of Lobe D - FEATURE E (new)

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 5 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe E						
88	C314_3259	4 432	14/08/23	10927	11831	View looking south at small depression on southwest corner of Lobe E - FEATURE F
89	C314_3260	4 366	14/08/23	10941	11827	View looking south at depression on southwest side of Lobe E - FEATURE F
90	C314_3261	4 401	14/08/23	10915	11823	View looking north at linear depression/scour on southwest corner of Lobe E - FEATURE F
91	C314_3262	4 358	14/08/23	10928	11820	View looking south at linear depression/scour on southwest corner of Lobe E - FEATURE F
92	C314_3263	4 367	14/08/23	10945	11790	View looking south at large depression on south side of Lobe E - FEATURE G
93	C314_3264	1 165	14/08/23	10942	11782	Panoramic view looking southwest to east from north of large depression on south side of Lobe E - FEATURE G
94	C314_3265	4 426	14/08/23	10915	11763	View looking west along south side of Lobe E
95	C314_3266	4 291	14/08/23	10917	11761	View looking north along east side of Lobe E
96	C314_3267	4 157	14/08/23	10899	11788	View looking north at areas of seasonal ponding on south side of Lobe E. Note high water mark near crest of lobe
97	C314_3268	4 297	14/08/23	10908	11748	View looking northwest at southeast corner of Lobe E
98	C314_3269	4 456	14/08/23	10933	11769	View looking southwest at linear depression on southeast area of Lobe E - FEATURE G
99	C314_3271	4 361	14/08/23	10951	11781	View looking southeast along east side of Lobe E
100	C314_3272	4 381	14/08/23	10951	11783	View looking north along east side of Lobe E
101	C314_3273	4 331	14/08/23	10962	11786	View looking east at minor erosion on east side of Lobe E - FEATURE P
102	C314_3274	4 321	14/08/23	10960	11777	View looking west at minor erosion on east side of Lobe E - FEATURE P
103	C314_3275	4 433	14/08/23	10965	11776	View looking west at minor erosion on east side of Lobe E - FEATURE P
104	C314_3276	4 441	14/08/23	10970	11786	View looking east at linear depression on east cover of Lobe E - FEATURE H
105	C314_3277	4 401	14/08/23	10982	11800	View looking southeast at 3 depressions on north cover of Lobe E - FEATURE H
106	C314_3278	4 320	14/08/23	10989	11776	View looking south along east side of Lobe E
107	C314_3279	4 382	14/08/23	10991	11776	View looking northwest along northeast side of Lobe E
108	C314_3280	4 327	14/08/23	11002	11785	View looking west along north side of Lobe E
109	C314_3281	1 383	14/08/23	10997	11805	Panoramic view looking east to south across surface from northeast corner of Lobe E
110	C314_3282	4 267	14/08/23	10979	11813	View looking south at linear depression on west slope - FEATURE H
111	C314_3283	4 401	14/08/23	10958	11821	View looking south at depression on west toe of Lobe E - FEATURE H

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 6 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe F						
112	C314_3240	710	14/08/23	11114	11786	Panoramic view looking southeast to southwest from north side of Lobe F
113	C314_3241	4 338	14/08/23	11098	11783	View looking south at depression on north side slope of Lobe F - FEATURE AA (new)
114	C314_3242	4 353	14/08/23	11094	11786	View looking southwest along north side of Lobe F
115	C314_3243	4 408	14/08/23	11095	11780	View looking southeast along north side of Lobe F
116	C314_3245	4 283	14/08/23	11088	11763	View looking west along north side of Lobe F
117	C314_3246	4 330	14/08/23	11087	11761	View looking south along east side of Lobe F
118	C314_3247	4 301	14/08/23	11083	11769	View looking northeast at former ponded area on northeast corner of Lobe F
119	C314_3248	1 246	14/08/23	11036	11755	Panoramic view looking southwest to north from southeast corner of Lobe F
120	C314_3249	4 334	14/08/23	11046	11797	View looking southeast along south side of Lobe F
121	C314_3250	4 452	14/08/23	11048	11799	View looking north along west side of Lobe F
122	C314_3251	4 335	14/08/23	11058	11803	View looking north at regraded disturbed area on west side slope of Lobe F - FEATURE X
123	C314_3252	4 363	14/08/23	11062	11812	View looking east at regraded disturbed area on west side slope of Lobe F - FEATURE X
124	C314_3253	4 292	14/08/23	11073	11811	View looking east at repaired disturbed area on west side slope of Lobe F - FEATURE X
125	C314_3254	4 361	14/08/23	11082	11808	View looking south at repaired disturbed area on west side slope of Lobe F - FEATURE X
126	C314_3255	4 434	14/08/23	11083	11803	View looking northeast along north side of Lobe F
127	C314_3256	4 282	14/08/23	11020	11788	View looking northeast at southwest side of Lobe F
Lobe G						
128	C314_3154	4 409	14/08/23	11065	11970	View looking east at drainage channel extending along southwest side of Lobe G
129	C314_3155	4 258	14/08/23	11061	11949	View looking southeast at ponded water extending along south side of Lobe G
130	C314_3156	4 256	14/08/23	11064	11950	View looking north-northwest along west side of Lobe G
131	C314_3157	4 390	14/08/23	11053	11944	View looking northeast at minor erosion on south side of Lobe G - FEATURE QQ (new)
132	C314_3158	4 376	14/08/23	11041	11931	View looking north at 9+ holes in cover on south side of Lobe G resulting from settlement of fines in regraded area - FEATURE I
133	C314_3159	4 413	14/08/23	11048	11932	View looking east at 9+ holes in cover on south side of Lobe G resulting from settlement of fines in regraded area - FEATURE I Note ponded water along south toe

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 7 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe G (Cont'd)						
134	C314_3160	4 432	14/08/23	11048	11927	View of holes in south cover resulting from settlement of fines in regraded area - FEATURE I
135	C314_3161	4 457	14/08/23	11030	11907	View looking northwest at regraded area on south side of Lobe G
136	C314_3162	4 277	14/08/23	11041	11909	View looking southeast at minor erosion along east edge of regrade area - FEATURE QQ (new)
137	C314_3163	4 430	14/08/23	11073	11925	View looking west along north side of regraded area on south side of Lobe G
138	C314_3164	1 224	14/08/23	11075	11930	Panoramic view looking east to southwest across regraded area on south side of Lobe G
139	C314_3165	4 401	14/08/23	11094	11957	View looking south at two areas of erosion (scouring) on west side slope of Lobe G - FEATURE QQ (new)
140	C314_3166	4 361	14/08/23	11096	11952	View looking east along north side of west extension of Lobe G
141	C314_3167	1 273	14/08/23	11093	11951	Panoramic view looking E to south from northwest corner of southwest extension on Lobe G
142	C314_3168	4 408	14/08/23	11083	11921	View looking northwest at large infilled crack on north side slope - FEATURE Zb and ponded water along toe
143	C314_3169	4 363	14/08/23	11094	11929	View looking east at large infilled crack on north side slope - FEATURE Zb
144	C314_3170	4 397	14/08/23	11085	11928	View looking north at large infilled crack on north side slope - FEATURE Zb and ponding along toe
145	C314_3171	4 355	14/08/23	11089	11924	View of large infilled crack on north side slope - FEATURE Zb
146	C314_3172	4 305	14/08/23	11095	11923	View of orange staining and ponding along north toe - FEATURE V (new)
147	C314_3173	4 455	14/08/23	11091	11901	View looking west from inside corner on west side of Lobe G. Note orange staining at inside corner toe - FEATURE V (new)
148	C314_3174	4 256	14/08/23	11095	11899	View looking north along west side of Lobe G
149	C314_3175	4 366	14/08/23	11091	11908	View of orange staining on inside toe on west side of Lobe G - FEATURE V (new)
150	C314_3176	4 311	14/08/23	11094	11891	View looking north at start of partially infilled parallel cracks extending along west crest of Lobe G - FEATURE Z
151	C314_3177	4 264	14/08/23	11104	11890	View of partially infilled parallel cracks extending along west crest of Lobe G - FEATURE Z
152	C314_3178	4 325	14/08/23	11113	11891	View looking south at start of partially infilled parallel cracks extending along west crest of Lobe G - FEATURE Z
153	C314_3179	4 413	14/08/23	11108	11892	View of partially infilled parallel cracks extending along west crest of Lobe G - FEATURE Z
154	C314_3180	4 370	14/08/23	11118	11899	View looking east at minor erosion on west side slope of Lobe G - FEATURE Q (new)
155	C314_3181	4 425	14/08/23	11118	11889	View looking west at minor erosion on west side slope of Lobe G - FEATURE Q (new)
156	C314_3182	4 441	14/08/23	11135	11888	View looking northwest at infilled crack extending upslope on west side of Lobe G - FEATURE Zb
157	C314_3183	4 439	14/08/23	11142	11897	View looking southeast at infilled cracks extending upslope on west side of Lobe G - FEATURE Zb
158	C314_3184	4 378	14/08/23	11140	11891	View of infilled parallel cracks extending upslope on west side of Lobe G - FEATURE Zb
159	C314_3187	4 318	14/08/23	11165	11883	View looking north at infilled crack on west side slope of Lobe G - FEATURE Zb
160	C314_3188	4 346	14/08/23	11177	11883	View of infilled crack on west side slope of Lobe G - FEATURE Zb
161	C314_3189	4 465	14/08/23	11185	11885	View looking south at infilled crack on west side slope of Lobe G - FEATURE Zb
162	C314_3190	4 319	14/08/23	11180	11888	View of partially infilled parallel cracks extending along west crest of Lobe G - FEATURE Z

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 8 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe G (Cont'd)						
163	C314_3191	4 308	14/08/23	11197	11885	View looking south along west side of Lobe G
164	C314_3192	4 388	14/08/23	11198	11878	View looking northwest along dry drainage feature extending from west toe of Lobe G
165	C314_3193	4 354	14/08/23	11204	11875	View looking south at linear depression on west side slope of Lobe G - FEATURE K
166	C314_3194	4 398	14/08/23	11202	11882	View looking north at linear depression on west side slope of Lobe G - FEATURE K
167	C314_3195	4 415	14/08/23	11233	11861	View north at pothole depression on north end of Lobe G - FEATURE E K (new)
168	C314_3196	4 299	14/08/23	11244	11860	View looking south along west side of Lobe G
169	C314_3197	4 390	14/08/23	11243	11858	View looking east along north side of Lobe G
170	C314_3198	1 312	14/08/23	11261	11855	Panoramic view looking east to southwest from northwest of Lobe G
171	C314_3214	4 371	14/08/23	11239	11841	View looking west along north side of Lobe G
172	C314_3215	4 294	14/08/23	11237	11841	View looking south along east side of Lobe G
173	C314_3216	4 377	14/08/23	11213	11842	View looking north along east side of Lobe G
174	C314_3217	4 306	14/08/23	11209	11842	View looking southeast long north side of Lobe G
175	C314_3218	4 394	14/08/23	11198	11809	View looking southwest at minor erosion on northeast slope of Lobe G - FEATURE R
176	C314_3219	4 357	14/08/23	11186	11817	View looking northwest at vehicle ruts on northeast cover of Lobe G
177	C314_3220	4 298	14/08/23	11195	11804	View looking south at infilled crack extending on northeast cover of Lobe G - FEATURE Zc
178	C314_3221	4 347	14/08/23	11170	11815	View looking north at infilled crack extending on northeast cover of Lobe G - FEATURE Zc
179	C314_3222	4 331	14/08/23	11193	11799	View looking south at infilled crack extending on northeast corner of Lobe G - FEATURE Zc
180	C314_3223	4 346	14/08/23	11186	11805	View of infilled crack extending on northeast corner of Lobe G - FEATURE Zc
181	C314_3224	4 372	14/08/23	11136	11815	View looking north along east side of Lobe G
182	C314_3225	4 292	14/08/23	11134	11815	View looking south along east side of Lobe G
183	C314_3226	4 417	14/08/23	11088	11824	View looking north along east side of Lobe G
184	C314_3227	4 424	14/08/23	11085	11825	View looking southwest along southeast side of Lobe G
185	C314_3228	4 347	14/08/23	11089	11843	View of stained area on east side of Lobe G - FEATURE V
186	C314_3231	1 220	14/08/23	11035	11858	Panoramic view looking west to north across cover from southeast corner of Lobe G
187	C314_3232	4 382	14/08/23	11047	11860	View looking west at minor erosion extending across southeast surface of Lobe G - FEATURE Q
188	C314_3233	4 388	14/08/23	11049	11875	View looking east at minor erosion extending across southeast surface of Lobe G - FEATURE Q
189	C314_3235	4 355	14/08/23	11041	11878	View looking east at minor erosion on southeast cover of Lobe G - FEATURE Q (new)
190	C314_3236	4 413	14/08/23	11038	11861	View looking west at minor erosion on southeast cover of Lobe G - FEATURE Q (new)

Table XXIII: LANDFILL VISUAL INSPECTION PHOTO LOG - NELF LANDFILL (Page 9 of 9)

Photo (NELF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
Lobe H						
191	C314_3199	4 410	14/08/23	11269	11835	View looking northeast along east side of Lobe H
192	C314_3200	4 394	14/08/23	11270	11838	View looking northwest along south side of Lobe H
193	C314_3202	4 379	14/08/23	11297	11823	View looking northeast at minor erosion on northeast side slope of Lobe H - FEATURE S
194	C314_3203	4 354	14/08/23	11306	11821	View looking southeast at minor erosion on northeast side slope of Lobe H - FEATURE S
195	C314_3204	4 306	14/08/23	11315	11814	View looking southwest along east side of Lobe H
196	C314_3205	4 417	14/08/23	11315	11824	View looking southeast at minor depressions on the north side of Lobe H - FEATURE L
197	C314_3206	4 362	14/08/23	11317	11819	View looking southwest at minor depressions on the north side of Lobe H - FEATURE L
198	C314_3207	4 390	14/08/23	11320	11830	View looking south at pothole depression on north cover of Lobe H - FEATURE L
199	C314_3208	4 342	14/08/23	11317	11834	View looking southwest along west toe from northwest corner of Lobe H
200	C314_3209	4 349	14/08/23	11302	11831	View looking west at minor erosion on west side slope of Lobe H - FEATURE S (new)
201	C314_3210	4 429	14/08/23	11267	11855	View looking northeast at southwest side of Lobe H
Soil Sampling						
C3-9	C314_3229	4 400	14/08/23	11051	11827	Sampling location C3-9 located between Lobes D, G and F at the Northeast Landfill
S9	C314_3230	4 361	14/08/23	11048	11830	View northeast at C3-9 soil sample location
C3-10	C314_3237	4 401	14/08/23	11102	11757	Sampling location C3-10 located downgradient of Lobe F at the Northeast Landfill
S10	C314_3238	4 399	14/08/23	11108	11755	View south-southwest at C3-10 soil sample location
C3-11	C314_3157	4 390	14/08/23	10983	11768	Sampling location C3-11 located downgradient of Lobe E at the Northeast Landfill
S11	C314_3158	4 376	14/08/23	10983	11762	View W at C3-11 soil sample location
C3-12	C314_3300	4 445	14/08/23	10863	11873	Sampling location C3-12 located downgradient of Lobe E at the Northeast Landfill
S12	C314_3301	4 343	14/08/23	10862	11867	View W at C3-12 soil sample located upgradient of Lobe B at the Northeast Landfill
C3-13	C314_3106	4 301	14/08/23	10793	11937	Sampling location C3-13 located downgradient of Lobe A at the Northeast Landfill
S13	C314_3107	4 302	14/08/23	10788	11939	View north at C3-13 soil sample location
C3-14	C314_3117	4 376	14/08/23	10882	11956	Sampling location C3-14 located downgradient of Lobe B at the Northeast Landfill
S14	C314_3118	4 278	14/08/23	10882	11962	View E at C3-14 soil sample location
C3-15	C314_3135	4 318	14/08/23	10972	11947	Sampling location C3-15 located downgradient of Lobe C at the Northeast Landfill
S15	C314_3136	4 349	14/08/23	10971	11952	View E at C3-15 soil sample location
C3-16	C314_3152	4 328	14/08/23	11072	11961	Sampling location C3-16 located downgradient of Lobe G at the Northeast Landfill
S16	C314_3153	4 396	14/08/23	11075	11964	View southeast at C3-16 soil sample location
C3-17	C314_3185	4 408	14/08/23	11156	11897	Sampling location C3-17 located downgradient of Lobe G at the Northeast Landfill
S17	C314_3186	4 306	14/08/23	11156	11901	View E at C3-17 soil sample location
C3-18	C314_3211	4 280	14/08/23	11236	11875	Sampling location C3-18 located downgradient of Lobe G at the Northeast Landfill
S18	C314_3212	4 299	14/08/23	11239	11878	View southeast at C3-18 soil sample location

7.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 Northeast Landfill samples are presented in Table XXIV 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 XXIV: Northeast Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C314-10A	C3-10	0-15	0.9	0.04	3.8	1.8	3.9	<5.0	4.5	12	<0.01	<0.1	<10	<50	<50
C314-10B		40-50	0.6	0.01	4.5	1.5	2.6	<5.0	2.9	7	<0.01	<0.1	<10	<50	<50
C314-11A	C3-11	0-15	1.6	0.04	4.9	1.6	4.0	<4.9	2.9	8	0.02	<0.1	<10	<50	70
C314-11B		40-50	1.5	0.02	5.1	1.4	2.4	<5.0	2.6	7	0.02	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-9A	C3-9	0-15	1.9	0.07	5.9	1.8	5.9	11.7	4.5	49	0.02	<0.1	<10	<50	<50
C314-9B		40-50	1.7	0.01	5.3	1.8	2.5	<5.0	3.2	11	0.01	<0.1	<10	<50	<50
C314-12A	C3-12	0-15	2.7	<0.01	6.8	2.2	2.7	<4.9	3.8	9	<0.01	<0.1	<10	<50	<50
C314-12B		40-50	3.1	<0.01	8.2	2.8	4.0	<4.9	5.2	9	0.02	<0.1	<10	<50	<50
C314-13A	C3-13	0-15	1.8	<0.01	5.9	1.7	2.3	11.4	3.6	6	<0.01	<0.1	<10	<50	<50
C314-13B		40-50	1.2	<0.01	4,0	1.2	2.0	<4.9	2.3	5	<0.01	<0.1	<10	<50	<50
C314-14A	C3-14	0-15	4.8	0.02	17.7	4.2	7.4	6.5	8.4	11	<0.01	<0.1	<10	<50	<50
C314-14B		40-50	5.2	0.01	22.3	5.3	9.6	6.7	11.7	11	<0.01	<0.1	<10	<50	<50
C314-15A	C3-15	0-15	5.5	0.02	15.8	4.4	6.8	10.0	9.5	9	<0.01	<0.1	<10	<50	<50
C314-15B		40-50	3.3	0.01	14.3	3.0	5.2	5.3	6.5	10	<0.01	<0.1	<10	<50	<50
C314-16A	C3-16	0-15	3.3	0.02	13.8	3.5	6.8	<5.0	7.6	11	<0.01	<0.1	<10	<50	<50
C314-16B		40-50	3.2	<0.01	16.1	4.0	6.4	5.6	9.0	11	<0.01	<0.1	<10	<50	<50
C314-17A	C3-17	0-15	2.2	0.11	9.8	3.3	7.8	<5.0	6.2	16	0.04	<0.1	<10	<50	114
C314-17B		40-50	2.9	0.07	10.8	3.2	6.5	<5.0	6.0	14	0.02	<0.1	<10	<50	61
C314-18A	C3-18	0-15	4.3	0.04	20.5	4.3	7.4	7.0	8.4	17	0.01	<0.1	<10	<50	<50
C314-18B		40-50	4.0	0.03	16.9	3.9	5.9	5.3	8.0	15	<0.01	<0.1	<10	<50	<50

8 USAF LANDFILL

8.1 SUMMARY

The 2014 monitoring of the USAF Landfill conducted on August 22, 2014 and 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.

No PCB or relatively high metal concentrations were detected in any of the soil samples taken. A detectable TPH (PHC F3 Fraction) concentration of 102 mg/kg was noted in one surface sample collected at MW-15. All other TPH concentrations were below the detection limit (50 mg/kg).

Water levels were sufficient to allow sampling of the three downgradient well locations at the USAF Landfill. The well located upgradient of the landfill (MW-12) was dry at the time of monitoring and consequently could not be sampled. No PCBs, TPH or relatively high metal concentrations were detected at any of the wells sampled.

Thermal monitoring was conducted at the USAF Landfill, all dataloggers and thermistors were observed to be functioning properly and datasets were successfully retrieved. Batteries were replaced in all dataloggers with the manufacturers' life expectancy of 2019.

As of the 2014 monitoring event, the USAF landfill is showing several areas of minor erosion and settlement along the cover and side slopes. Parallel tension cracks were observed at two locations along the lower slope on the southwest side of the facility. The frequency and magnitude of these cracks appear to have decreased from the previous inspections and were noted to be partially to completely in-filled at the time of the inspection. A newly observed crack was noted extending along the toe on the northeast side of the landfill and was also in-filled at the time of inspection. The overall performance of the USAF Landfill is rated as acceptable.

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table XXV of this report.

Table XXV: Visual Inspection Checklist / Report – USAF Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST

INSPECTION REPORT – PAGE 1 of 3

SITE NAME: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: USAF Landfill (Leachate Containment Landfill)
DATE OF INSPECTION: August 22, 2014
DATE OF PREVIOUS INSPECTION: August 22-23, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 6
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 XXV: USAF LANDFILL VISUAL INSPECTION (PAGE 2 OF 3)

Site Name: CAM-3 Shepherd Bay
Landfill: USAF Landfill
Designation: Leachate Containment Landfill
Date Inspected: August 22, 2014
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature:

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.7 (E slopes) 1 New Obs.	0.3 - 1.5 m	0.2 - 1 m	0.05 - 0.07 m	Occasional (<1%)	Five minor surface depressions	USAF-65, 66, 69, 71-73	Acceptable	Five surface depressions on south and southeast side slopes.
		FEATURE B See Figure CAM-3.7 (SW side slope)	1.5 - 2 m	0.5 - 1.5 m	5 - 10 cm	N/A	N/A	N/A	N/A	Depressions not observed.
		FEATURE C See Figure CAM-3.7 (SW cover)	1.5 - 4 m	0.5 - 1	0.05 - 0.1 m	Isolated	Linear surface depression	USAF-33, 34	Acceptable	Subtle surface depression. Consistent with 2012 observations.
		FEATURE D See Figure CAM-3.7 (SW toe)	6 m	2 m	0.2 m	Isolated	Parabolic shaped depression along toe	USAF-45, 47	Acceptable	Single area situated along southwest toe. Consistent with 2012 observations.
Erosion	Yes	FEATURE E See Figure CAM-3.7 (E slope) - 4 New Obs.	10 -18 m	0.1 - 1 m	0.01 - 0.1 m	Occasional (<1%)	Minor surface erosion	USAF-64, 66-68, 70	Acceptable	Localized runoff from east and southeast cover. Increase in depth from 2012 observations. Slope appears stable and self armouring.
		FEATURE F See Figure CAM-3.7 (SW slope)	8 - 15 m	0.2 - 0.5 m	0.01 - 0.05 m		Minor surface erosion	USAF-43, 44, 49	Acceptable	Surface runoff has resulted in erosion of two localized channels on the southwest side slope . Slope appears stable and self armouring. Consistent with 2012 observations
		FEATURE K See Figure CAM-3.7 (NE toe) New Obs.	20 m	0.3 - 0.5 m	0.02 - 0.05 m	Isolated	Minor surface erosion along toe	USAF-50, 51	Acceptable	Minor washing of fines along northeast toe of landfill
Frost Action	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A

TABLE XXV: USAF LANDFILL VISUAL INSPECTION (PAGE 3 OF 3)

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Vegetation	Yes	See Figure CAM-3.7 (cover, NE, SW and E slopes)	N/A	N/A	N/A	N/A	Sparsely vegetated areas	USAF-35, 40, 51, 59, 62, 72	N/A	N/A
Staining	Yes	FEATURE G See Figure CAM-3.7 (NE toe).	3 m	0.3 m	Unknown	Isolated	Localized rust coloured staining at toe	USAF-57	Acceptable	Localized ponding along northeast toe. Consistent with 2012 observations.
Vegetation Stress	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	Not Observed	N/A	N/A	N/A	N/A
Debris Exposed	Yes	FEATURE L See Figure CAM-3.7 (E side slope) - New Obs.	0.9 m	0.1 m	Unknown	Isolated	Partially exposed piece of wood	USAF-28	Acceptable	N/A
Presence/Condition of Monitoring Instruments	Yes	(NE toe).	N/A	N/A	N/A	Not Observed	VT-1 to VT-4 and MW-12 to MW-15	USAF-32, 41, 58, 60 and 12W, 13W, 14W, 15W	Acceptable	The protective casings at all locations were in good condition. MW-12 missing padlock. Data downloaded from all thermistors.
Other Features of Note:	Yes	FEATURE H See Figure CAM-3.7 (E slope)	4 - 5 m	2 - 30 mm	Unknown	Occasional (<2%)	N/A	N/A	Acceptable	Cracks not observed. Assumed to be infilled.
		FEATURE I See Figure CAM-3.7 (SW slope - center)	8 m	1 - 2 cm	Unknown		Parallel tension cracks extending across lower slope..	USAF-46, 48	Marginal	Overall, frequency of cracks appear to have decreased from 2012 with partially to complete infilling at several locations.
		FEATURE J See Figure CAM-3.7 (SW slope)	4 - 10 m	1 - 2 cm	Unknown		Parallel cracks extending in across lower slope.	USAF-35-40	Acceptable	Majority of cracks are partially infilled.
		FEATURE M See Figure CAM-3.7 (N toe) - New Obs.	19 m	2 - 4 cm	Unknown		Infilled crack extending along toe of slope	USAF-23-25	Acceptable	Secondary erosion also located along toe of slope.
		See Figure CAM-3.7 (SW and NE toe)	3 - 60 m	3 - 10 m	Unknown	N/A	Localized ponding	USAF-11, 16, 17, 18, 49, 52-57	Acceptable	Not in contact with landfill
Additional Photos	Yes	See Figure CAM-3.7 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note.
Overall Landfill Performance:	**Acceptable**									

8.2 PRELIMINARY STABILITY ASSESSMENT

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

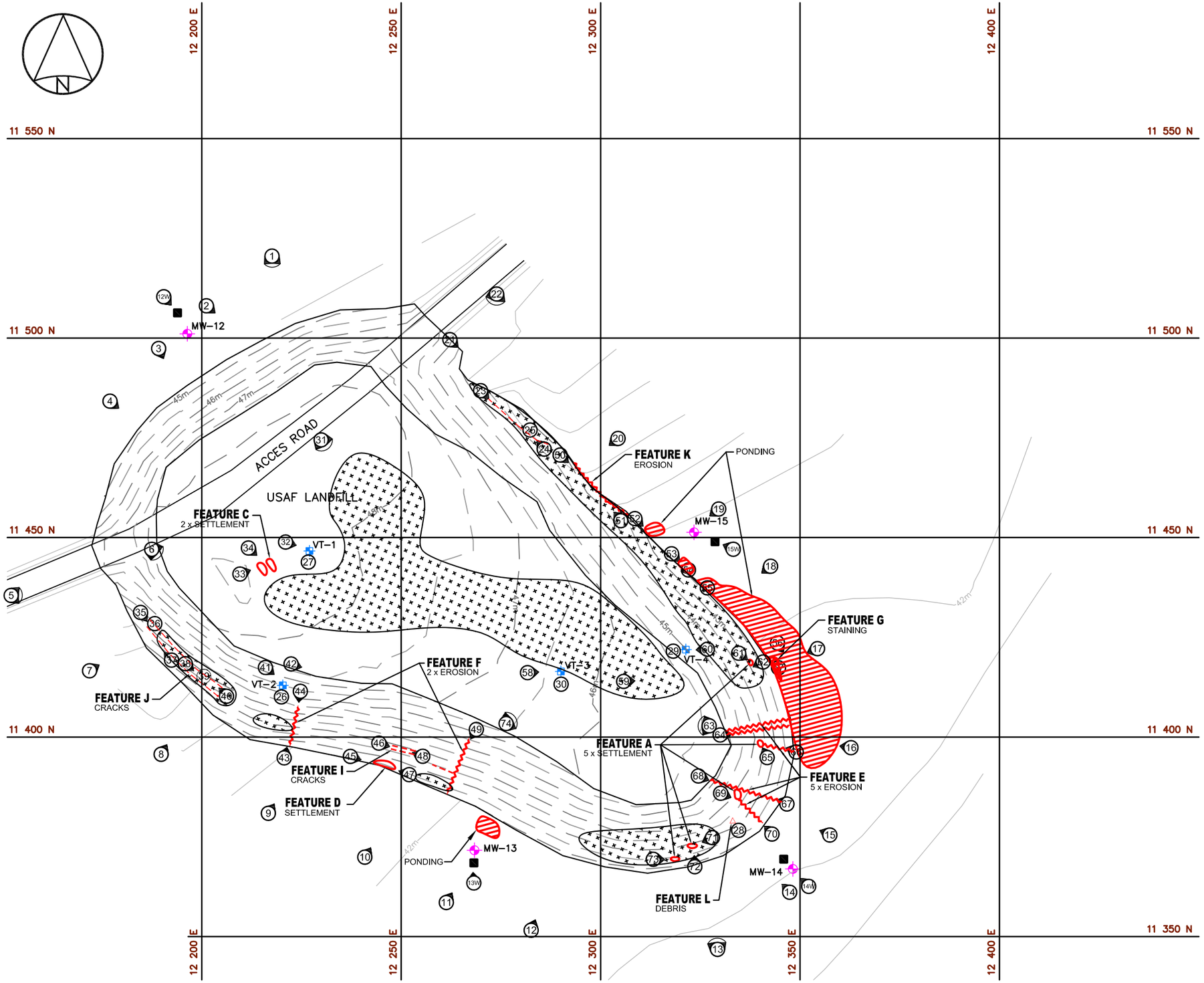
Table XXVI: Preliminary Stability Assessment – USAF Landfill

Feature	Severity Rating	Extent
Settlement/Cracks	Acceptable	Occasional
Erosion	Acceptable	Occasional
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	Occasional (adjacent to landfill)
Debris exposure	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

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

8.3 LOCATION PLAN

The Location Plan for the USAF Landfill has been completed as per the TOR and is presented in Figure CAM-3.7.



LEGEND

- MW — MONITORING WELL LOCATION
- VT — VERTICAL THERMISTOR
- MONITORING SOIL SAMPLE LOCATION
- (1) PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- EROSION (NTS)
- CRACK (NTS)
- STAINING
- PONDING
- DEBRIS
- SPARSE VEGETATION

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

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15–04–27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

USAF LANDFILL

SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,000	APRIL 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. ENG
PROJECT NO:	DRAWING NO:	PAGE
CD2656_004_160	CD2656_004_160_101-CAM-3_7	PL

FIGURE CAM-3.7

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_7.dwg, PL, 2015-04-27 8:51:18 AM

8.4 PHOTOGRAPHIC RECORDS

The Photographic Record for USAF Landfill has been completed as per the TOR and is included as Table XXVII hereafter. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XXVII: Landfill Visual Inspection Photo Log – USAF Landfill (page 1 of 3)

Site Name: CAM-3, Shepherd Bay
Landfill: USAF Landfill
Date Inspected: August 22, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (USAF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C314_2944	1 016	14/08/22	12217	11521	Panoramic view looking southeast to southwest fro north side of USAF Landfill
2	C314_2945	4 302	14/08/22	12201	11508	View looking southeast at northwest side of USAF Landfill
3	C314_2946	4 361	14/08/22	12189	11497	View looking southeast at northwest side of USAF Landfill
4	C314_2947	4 349	14/08/22	12177	11484	View looking southeast at northwest side of USAF Landfill
5	C314_2948	1 063	14/08/22	12153	11436	Panoramic view looking NE to SE from access road west of USAF Landfill
6	C314_2949	1 212	14/08/22	12188	11447	Panoramic view looking east to south across cover from access road west of USAF Landfill
7	C314_2950	4 244	14/08/22	12172	11417	View looking northeast at southwest side of USAF Landfill
8	C314_2951	4 420	14/08/22	12189	11396	View looking northeast at southwest side of USAF Landfill. VT-2 visible on right
9	C314_2952	4 455	14/08/22	12217	11380	View looking northeast at southwest side of USAF Landfill. VT-2 visible on left
10	C314_2953	4 195	14/08/22	12241	11370	View looking northeast at southwest side of USAF Landfill. MW-13 location visible in center
11	C314_2954	4 475	14/08/22	12261	11358	View looking northeast at southwest side of USAF Landfill. MW-13 location visible in center
12	C314_2955	4 373	14/08/22	12283	11351	View looking N at south side of USAF Landfill
13	C314_2956	1 106	14/08/22	12329	11346	Panoramic view looking NW to NE from southeast of USAF Landfill
14	C314_2957	4 334	14/08/22	12347	11361	View looking northwest at southeast side of USAF Landfill
15	C314_2958	4 309	14/08/22	12358	11375	View looking southwest at northeast side of USAF Landfill. VT-4 visible on right
16	C314_2959	4 410	14/08/22	12363	11397	View looking southwest at northeast side of USAF Landfill. VT-4 visible in center
17	C314_2960	4 274	14/08/22	12354	11422	View looking southwest at northeast side of USAF Landfill. MW-15 visible center foreground
18	C314_2961	4 322	14/08/22	12343	11442	View looking west at northeast side of USAF Landfill. VT-3 visible on far left
19	C314_2962	4 027	14/08/22	12329	11457	View looking southwest at northeast side of USAF Landfill
20	C314_2964	4 319	14/08/22	12305	11474	View looking southwest at northeast side of USAF Landfill

Table XXVII: USAF LANDFILL VISUAL INSPECTION PHOTO LOG (PAGE 2 OF 3)

Photo (USAF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
21	C314_2965	4 284	14/08/22	12263	11499	View looking southeast along northeast toe of USAF Landfill. VT-4 visible in right background
22	C314_2966	1 129	14/08/22	12275	11511	Panoramic view looking SE to SW at USAF Landfill from service road adjacent to NWS USAF Landfill
23	C314_2967	4 443	14/08/22	12270	11486	View looking southeast at in-filled crack extending along northeast toe of USAF Landfill - FEATURE M (new)
24	C314_2968	4 436	14/08/22	12286	11472	View looking northwest at in-filled crack extending along northeast toe of USAF Landfill - FEATURE M (new)
25	C314_2969	4 400	14/08/22	12282	11476	View of in-filled crack extending along northeast toe of USAF Landfill - FEATURE M (new)
26	C314_2972	3 995	14/08/22	12220	11413	Datalogger at VT-2
27	C314_2973	4 289	14/08/22	12228	11446	Datalogger at VT-1
28	C314_2978	4 365	14/08/22	12333	11378	View of partially exposed wood debris on east side slope of USAF Landfill - FEATURE L (new)
29	C314_2979	3 998	14/08/22	12320	11422	Datalogger at VT-4
30	C314_2980	4 079	14/08/22	12290	11416	Dataloggger at VT-3
31	C314_2983	1 035	14/08/22	12230	11474	Panoramic view looking east to southwest across cover of USAF Landfill
32	C314_2984	4 270	14/08/22	12221	11448	View looking southeast at VT-1
33	C314_2986	4 429	14/08/22	12210	11441	View looking northeast at two minor depressions on west cover of USAF Landfill - FEATURE C
34	C314_2987	4 402	14/08/22	12212	11447	View looking southeast at two minor depressions on west cover of USAF Landfill - FEATURE C
35	C314_2988	4 377	14/08/22	12185	11431	View looking southeast at partially infilled cracks extending along west side of USAF Landfill - FEATURE J
36	C314_2989	4 245	14/08/22	12187	11429	View of partially infilled crack extending along west side of USAF Landfill - FEATURE J
37	C314_2990	4 397	14/08/22	12193	11419	View looking northwest at partially infilled cracks extending along west side of USAF Landfill - FEATURE J
38	C314_2991	4 355	14/08/22	12196	11418	View looking southeast at parallel cracks extending along west side of USAF Landfill - FEATURE J
39	C314_2993	4 300	14/08/22	12200	11415	View of crack extending along west side of USAF Landfill - FEATURE J
40	C314_2994	4 414	14/08/22	12206	11410	View looking northwest at parallel cracks extending along west side of USAF Landfill - FEATURE J
41	C314_2995	4 430	14/08/22	12216	11417	View looking southeast at VT-02
42	C314_2996	4 457	14/08/22	12222	11418	View looking southeast along southwest crest of USAF Landfill
43	C314_2997	4 416	14/08/22	12221	11394	View looking north at minor erosion on lower side slope on southwest side of USAF Landfill - FEATURE F
44	C314_2998	4 460	14/08/22	12224	11410	View looking south at minor erosion on lower side slope on southwest side of USAF Landfill - FEATURE F
45	C314_2999	4 369	14/08/22	12237	11395	View looking east-southeast at parabolic depression (and vegetation) along toe of slope - FEATURE D
46	C314_3000	4 440	14/08/22	12245	11398	View of looking east-southeast at infilled parallel cracks extending southwest side slope - FEATURE I
47	C314_3001	4 416	14/08/22	12250	11391	View looking west-northwest at parabolic depression (and vegetation) along toe of slope - FEATURE D
48	C314_3002	4 369	14/08/22	12255	11395	View looking west-northwest at parallel cracks extending along southwest side slope of USAF Landfill - FEATURE I
49	C314_3003	4 357	14/08/22	12269	11401	View looking southwest at minor erosion on southwest slope of USAF Landfill - FEATURE F
50	C314_3022	4 357	14/08/22	12289	11470	View looking southeast at minor erosion along northeast toe of USAF Landfill - FEATURE K (new)

Table XXVII: USAF LANDFILL VISUAL INSPECTION PHOTO LOG (PAGE 3 OF 3)

Photo (USAF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
51	C314_3023	4 378	14/08/22	12305	11453	View looking northwest at minor erosion along northeast toe of USAF Landfill - FEATURE K (new)
52	C314_3024	4 369	14/08/22	12306	11455	View looking southeast at ponding along northeast toe of USAF Landfill
53	C314_3025	4 405	14/08/22	12317	11446	View looking southeast at ponding along northeast toe of USAF Landfill. Note bacterial sheen on water surface
54	C314_3026	4 410	14/08/22	12322	11441	View of ponding along northeast toe of USAF Landfill. Note bacterial sheen on water surface
55	C314_3027	4 440	14/08/22	12327	11437	View of ponding near northeast toe of USAF Landfill. Note bacterial sheen on water surface
56	C314_3028	4 271	14/08/22	12341	11423	View looking southeast at ponding along northeast toe of USAF Landfill. Note bacterial sheen on water surface
57	C314_3029	4 437	14/08/22	12344	11417	View looking southeast at minor rust coloured staining along east toe of USAF Landfill - FEATURE G (new)
58	C314_3030	4 341	14/08/22	12282	11416	View looking east at VT-3. VT-4 in background
59	C314_3031	4 460	14/08/22	12306	11413	View looking east at sparse vegetation on east cover of USAF Landfill
60	C314_3032	4 322	14/08/22	12327	11422	View looking west at VT-4. VT-3 in background
61	C314_3033	4 395	14/08/22	12335	11421	View looking southeast at minor depression near toe of east side slope - FEATURE A
62	C314_3034	4 319	14/08/22	12340	11418	View looking southwest at minor depression near toe of east side slope - FEATURE A
63	C314_3035	1 254	14/08/22	12327	11402	Panoramic view looking west to northeast across surface from east end of USAF Landfill
64	C314_3036	4 361	14/08/22	12331	11400	View looking east-southeast at erosion on east side slope of USAF Landfill - FEATURE E (new)
65	C314_3038	4 384	14/08/22	12342	11395	View looking northwest at minor depression on mid east slope of USAF Landfill - FEATURE A
66	C314_3039	4 297	14/08/22	12348	11396	View looking west at minor depression on mid east slope of USAF Landfill - FEATURE A
67	C314_3040	4 360	14/08/22	12346	11384	View looking west at erosion on east side slope of USAF Landfill - FEATURE E
68	C314_3041	4 428	14/08/22	12325	11390	View looking east at erosion on east side slope of USAF Landfill - FEATURE E
69	C314_3042	4 372	14/08/22	12331	11386	View looking east at depression south of erosion on east side slope - FEATURE A
70	C314_3043	4 306	14/08/22	12343	11376	View looking west at erosion on east side slope of USAF Landfill - FEATURE E (new)
71	C314_3044	4 431	14/08/22	12327	11375	View looking west at small depression on east side slope of USAF Landfill - FEATURE A
72	C314_3045	4 398	14/08/22	12324	11368	View looking north at small depression on east side slope of USAF Landfill - FEATURE A
73	C314_3046	4 354	14/08/22	12314	11369	View looking east at small depression on east side slope of USAF Landfill - FEATURE A
74	C314_3047	1 209	14/08/22	12276	11403	Panoramic view looking north to southeast across east cover from southwest crest of USAF Landfill
Soil Sampling						
MW-12	C314_2970	4 359	14/08/22	12194	11506	Sampling location C314-12W located upgradient of USAF LF
12W	C314_2971	4 403	14/08/22	12191	11510	View looking southeast at MW-12 soil sample location
MW-13	C314_2974	4 391	14/08/22	12266	11367	Sampling location C314-13W located downgradient of USAF LF
13W	C314_2975	4 368	14/08/22	12265	11365	View looking northeast at MW-13 soil sample location
MW-14	C314_2976	4 373	14/08/22	12346	11369	Sampling location C314-14W located downgradient of USAF LF
14W	C314_2977	4 310	14/08/22	12351	11364	View looking northwest at MW-14 soil sample location
MW-15	C314_2981	4 375	14/08/22	12328	11449	Sampling location C314-15W located downgradient of USAF LF
15W	C314_2982	4 406	14/08/22	12332	11448	View looking northwest at MW-15 soil sample location

8.5 THERMISTOR ANNUAL MAINTENANCE REPORTS

All thermistors at the USAF Landfill were inspected and found to be in good condition with no significant concerns identified. Data from all thermistors was successfully downloaded. Review of the downloaded thermal data identified all analogues/thermocouples to be functioning properly.

Batteries were replaced in all datalogger units as specified in the TOR. Internal memories were reset and clocks were synchronized using the Prolog software. Manual resistive readings were collected from the thermistor strings as per the TOR. Manual readings and inspection results for each thermistor (VT-1 to VT-4) are presented on the Thermistor Annual Maintenance Reports included in this section of the report.

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-1**	Inclination		**Vertical**			
Install Date:	**2007-08-18**	First Date Event		**2008-08-05**	Last Date Event		**2012-08-22**
Coordinates and Elevation	N	**11447**	E	**12226.9**	Elev	**48.8**	
Length of Cable (m)	**5.8**	Cable Lead Above Ground (m)	**3.1**	Nodal Points			**6**
Datalogger Serial #	**09100123 (replaced #02020211 in 2010)**			Cable Serial Number			

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date		**2014-08-22 (New)**		
Battery Levels	Main	**11.34**	Aux	**13.5**
		(11.34 prior to change)		(13.14 prior to change)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11.355	6.8043
2	13.591	3.2344
3	14.948	1.6108
4	16.044	0.3607
5	17.095	-0.8554
6	18.277	-2.1265
-	-	-
-	-	-

Bead	ohms	Degrees C
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Observations and Proposed Maintenance

Download file: Site_001_09100123_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-2**	Inclination		**Vertical**			
Install Date:	**2007-08-18**	First Date Event		**2008-08-05**	Last Date Event		**2012-08-22**
Coordinates and Elevation	N	**11412.9**	E	**12220.3**	Elev	**46.6**	
Length of Cable (m)	**6.7**	Cable Lead Above Ground (m)	**3.05**	Nodal Points			**8**
Datalogger Serial #	**02020216**			Cable Serial Number			

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date		**2012-08-22 (New)**		
Battery Levels	Main	**11.34**	Aux	**13.6**
		(11.34 prior to change)		(13.02 prior to change)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.324	9.3926
2	13.104	3.6466
3	14.496	2.2708
4	15.78	0.5654
5	16.794	-0.4567
6	17.728	-1.5765
7	18.622	-2.475
8	19.668	-3.5851

Bead	ohms	Degrees C
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Observations and Proposed Maintenance

Download file: Site_002_VT-2_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**		Thermistor Location		**USAF Landfill**		
Thermistor Number:	**VT-3**		Inclination		**Vertical**		
Install Date:	**2007-08-18**		First Date Event		**2008-08-05**	Last Date Event	**2012-08-22**
Coordinates and Elevation		N	**11416.6**	E	**12289.8**	Elev	**46.4**
Length of Cable (m)	**6.8**		Cable Lead Above Ground (m)	**3.1**	Nodal Points		**8**
Datalogger Serial #	**02020213**				Cable Serial Number		

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date		**2012-08-22 (New)**		
Battery Levels	Main	**11.34**	Aux	**13.02**
		(11.34 prior to change)		(12.65 prior to change)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11.424	7.2845
2	14.174	2.7366
3	14.835	-1.8996
4	16.288	0.062
5	16.672	-0.3134
6	17.454	-1.2078
7	18.633	-2.5034
8	21.23	-5.0757

Bead	ohms	Degrees C
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Observations and Proposed Maintenance

Download file: Site_003_VT-3_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**2014-08-22**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-3**	Thermistor Location		**USAF Landfill**			
Thermistor Number:	**VT-4**	Inclination		**Vertical**			
Install Date:	**2007-08-18**	First Date Event		**2008-08-05**	Last Date Event		**2012-08-22**
Coordinates and Elevation	N	**11422.1**	E	**12321.3**	Elev	**45.1**	
Length of Cable (m)	**6.5**	Cable Lead Above Ground (m)	**2.9**	Nodal Points			**8**
Datalogger Serial #	**00207019**			Cable Serial Number			

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date		**2012-08-22 (New)**		
Battery Levels	Main	**11.34**	Aux	**12.77**
		(11.34 prior to change)		(12.53 prior to change)

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	11.466	6.9868
2	12.678	4.9594
3	14.011	2.5589
4	15.6	1.0044
5	16.618	-0.2068
6	17.41	-1.4304
7	18.463	-2.3277
8	19.382	-3.2692

Bead	ohms	Degrees C
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Observations and Proposed Maintenance

Download file: Site_004_207019_Aug_22_2014

Both batteries (ULB-1 and ULB-15) changed out. Manufactures replacement date: 07/19

8.6 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 USAF Landfill samples are presented in Table XXVIII 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 XXVIII: USAF Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth (cm)	Parameters												
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C314-12WA	MW-12	0-15	0.4	<0.01	3.1	1.1	<1.0	<4.9	1.8	6	<0.01	<0.1	<10	<50	<50
C314-12WB		40-50	0.7	<0.01	3.4	1.5	1.3	<5.0	1.7	8	<0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-13WA	MW-13	0-15	0.8	0.01	4.6	1.8	1.4	<4.9	2.2	8	<0.01	<0.1	<10	<50	<50
C314-13WB		40-50	1.1	<0.01	5.4	1.9	3.3	<4.9	2.9	9	<0.01	<0.1	<10	<50	<50
C314-14WA	MW-14	0-15	2.4	0.11	9.7	2.7	10.0	<4.9	4.5	47	0.05	<0.1	<10	<50	<50
C314-14WB		40-50	2.3	0.01	11.6	4.9	6.6	8.1	7.9	18	<0.01	<0.1	<10	<50	<50
C314-15WA	MW-15	0-15	1.4	0.10	3.1	1.7	15.8	<4.9	4.2	12	0.03	<0.1	<10	<50	102
C314-15WB		40-50	2.1	0.02	11.1	4.2	5.5	6.3	6.6	17	<0.01	<0.1	<10	<50	<50

8.7 GROUNDWATER SAMPLE ANALYTICAL DATA

Although requested in the Chains of Custody, Exova did not perform the mercury analysis on groundwater samples. Concentration presented for sample collected at MW-15 comes from Maxxam duplicate sample analysis. The groundwater chemical analysis results and evaluation for the analytical data for the 2014 Tier II Disposal Facility samples are presented in Table XXIX 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 XXIX: USAF Landfill Summary Table for Groundwater Analytical Data

Sample #	Location	Parameters												
		As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [mg/L]	Hg [mg/L]	PCBs [ug/L]	F1 C_6-C_{10} [mg/L]	F2 C_{10}-C_{16} [mg/L]	F3 C_{16}-C_{34} [mg/L]
Detection Limit		0.0002	0.00001	0.0005	0.0001	0.001	0.0001	0.0005	0.001	0.00002*	0.1	0.2	0.1	0.1
Upgradient Groundwater Sample														
C314-12W	MW-12	- Well Dry -												
Downgradient Groundwater Samples														
C314-13W	MW-13	0,0100	0.00020	0.0538	0.0087	0.026	0.0130	0.0345	0.628	N/A	<0.1	<0.2	<0.2	<0.1
C314-14W	MW-14	0.0061	0.00026	0.0340	0.0050	0.038	0.0089	0.0379	0.512	N/A	<0.1	<0.2	<0.2	<0.1
C314-15W	MW-15	0.0152	0.00030	0.0947	0.0083	0.037	0.0089	0.0803	0.111	<0.00002*	<0.1	<0.2	<0.2	<0.1

Note: Although requested in the Chains of Custody, Exova did not perform the mercury analysis on groundwater samples

*: Value from Maxxam (QA Sample)

8.8 MONITORING WELL SAMPLING/INSPECTION LOGS

The monitoring well sampling and inspection logs for MW-12 to MW-15 are included in this section. It should be noted that the lock is missing at MW-12 and should be replaced.

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-22	Time:	15:00
Names of Samplers:	A.Passalis		
Landfill Name:		USAF Landfill	
Monitoring Well ID:	MW-12		
Sample Number:	N/A (dry)		
Condition of Well:	Good	Missing Lock	
Measured Data			
Well pipe height above ground	40		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	353		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	53		
Depth to water surface (cm)= (from top of pipe)	N/A	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	N/A		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	131	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	N/A		
Static volume of water in well (mL)=	N/A		
Free product thickness (mm)=	N/A	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	N	Purging/Sampling Equipment:	N/A
Volume Purged Water=	N/A		
Decontamination required: (Y/N)	N/A		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	N/A		
Final Conductivity (uS/cm)=	N/A		
Final Temperature (degC)=	N/A		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-23	Time:	16:45
Names of Samplers:	A.Passalis		
Landfill Name:	USAF Landfill		
Monitoring Well ID:	MW-13		
Sample Number:	C314-13W		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	38		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	360		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	60		
Depth to water surface (cm)= (from top of pipe)	68	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	30		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	164	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	96		
Static volume of water in well (mL)=	1206		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra Tubing, Foot Valve
Volume Purged Water=	1500 mL		
Decontamination required: (Y/N)	N, dedicated		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	7.8	Clear, colourless	
Final Conductivity (uS/cm)=	2940		
Final Temperature (degC)=	2.1		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-23	Time:	17:05
Names of Samplers:	A.Passalis		
Landfill Name:	USAF Landfill		
Monitoring Well ID:	MW-14		
Sample Number:	C314-14W		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	50		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	351		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	51		
Depth to water surface (cm)= (from top of pipe)	83	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	33		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	164	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	81		
Static volume of water in well (mL)=	1018		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra Tubing, Foot Valve
Volume Purged Water=	1200 mL		
Decontamination required: (Y/N)	N, dedicated		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	7.8	Clear, colourless	
Final Conductivity (uS/cm)=	1929		
Final Temperature (degC)=	2.1		

Site Name:	**CAM-3**	**Shepherd Bay**	**Nunavut**
Date of Sampling Event:	2014-08-23	Time:	17:30
Names of Samplers:	A.Passalis		
Landfill Name:		USAF Landfill	
Monitoring Well ID:	MW-15		
Sample Number:	C314-15W	(dup: C314-BDW1)	
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	61		
Diameter of well (cm)=	4	ID	
Depth of well installation (cm)= (from ground surface)	343		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	43		
Depth to water surface (cm)= (from top of pipe)	65	Measurement method: (meter, tape, etc)	Interface Meter
Static water level (cm)= (below ground surface)	4		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	163	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	98		
Static volume of water in well (mL)=	1232		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	Interface Meter
Purging: (Y/N)	Y	Purging/Sampling Equipment:	Waterra Tubing, Foot Valve
Volume Purged Water=	1400 mL		
Decontamination required: (Y/N)	N, dedicated		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	5.6	Clear, colourless	
Final Conductivity (uS/cm)=	2810		
Final Temperature (degC)=	1.5		

9 NWS LANDFILL

9.1 SUMMARY

On August 22, 2014 soil sampling and a visual inspection were completed at the NWS Landfill.

TPH, 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 Beach Landfill. No exposed debris is present at the lobes. Isolated minor settlement and erosional features were noted during the 2014 assessment and were not observed during the previous 2012 assessment.

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

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table XXX of this report.

Table XXX: Visual Inspection Checklist / Report – NWS Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION – LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST

INSPECTION REPORT – PAGE 1 of 2

SITE NAME: CAM-3 Shepherd Bay
LANDFILL DESIGNATION: NWS Landfill (Regrade Landfill)
DATE OF INSPECTION: August 22, 2014
DATE OF PREVIOUS INSPECTION: August 22, 2012
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 6
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 XXX: NWS LANDFILL VISUAL INSPECTION (PGE 2 OF 2)

Site Name: CAM-3 Shepherd Bay
Landfill: NWS Landfill
Designation: Regrade Landfill
Date Inspected: August 23, 2014
Inspected by: Andrew Passalis, P.Eng.
Sila Remediation Inc.

Signature:

Checklist Item	Present (Yes/No)	Location	Length	Width	Depth	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-3.8 (SW side slope) New Obs.	0.6 m	0.2 m	0.05 m	Isolated	Minor depression	NWS-9	Acceptable	Single isolated minor depression
Erosion	Yes	FEATURE B See Figure CAM-3.8 (SW side slope) New Obs.	3 m	0.2 m	0.05 m	Isolated	Minor erosion	NWS-7, 8	Acceptable	Washing of fines. Slope appears stable
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Staining	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Other Features of Note:	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Observed	N/A
Additional Photos	Yes	See Figure CAM-3.8 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic Record	N/A	N/A	General photos for documentation, no features of note
Overall Landfill Performance:	**Acceptable**									

9.2 PRELIMINARY STABILITY ASSESSMENT

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

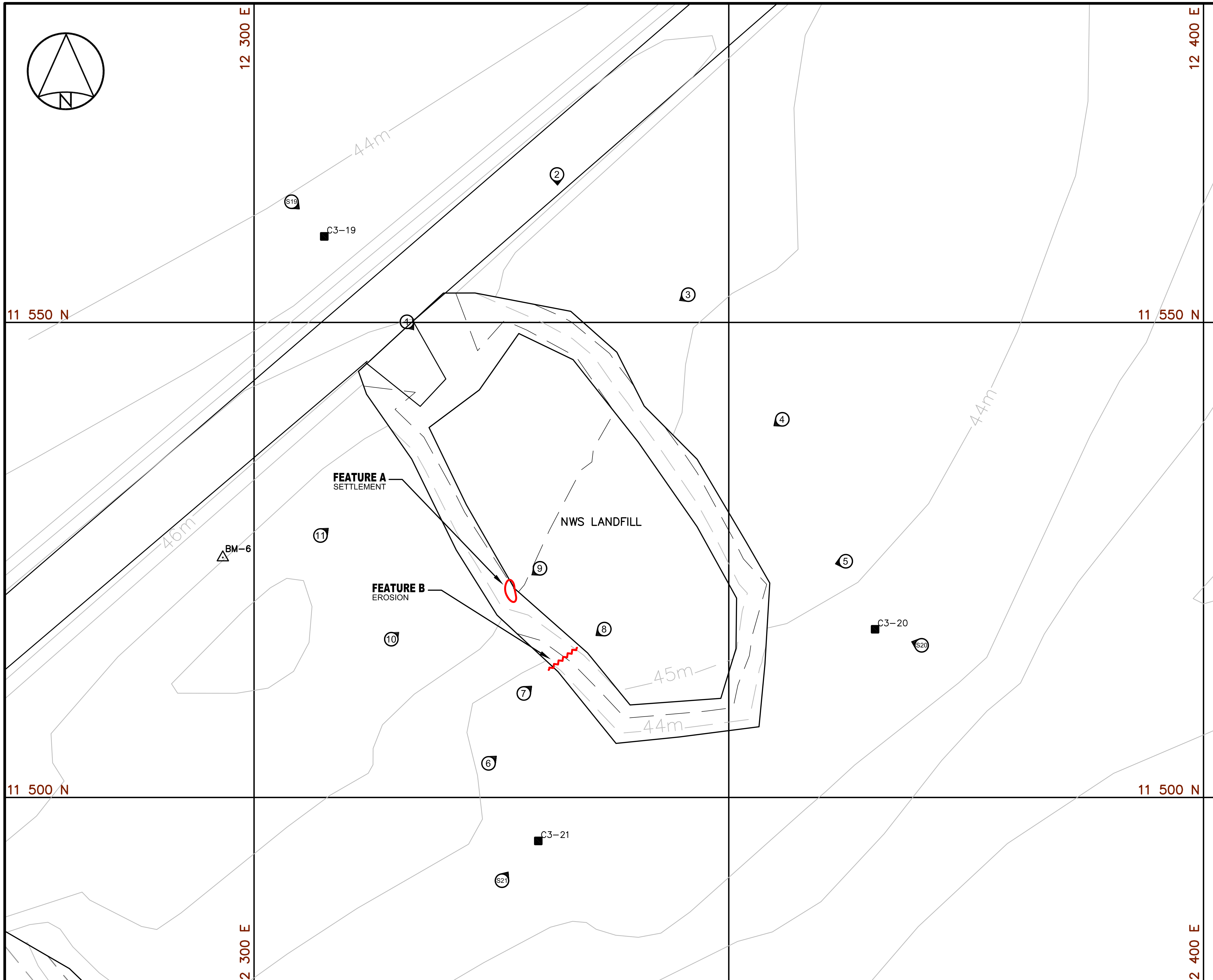
Table XXXI: Preliminary Stability Assessment – NWS Landfill

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

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

9.3 LOCATION PLAN

The Location Plan for the NWS Landfill has been completed as per the TOR and is presented in Figure CAM-3.8.



LEGEND

- BM-6 — SURVEY CONTROL MONUMENT
- MONITORING SOIL SAMPLE LOCATION
- (1) — PICTURE NUMBER VIEWPOINT
- SETTLEMENT (NTS)
- EROSION (NTS)

0m 4m 8m 12m 16m 20m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15-04-27	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-3, SHEPHERD BAY, NUNAVUT

NWS 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 : 400	APRIL 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. ENG
PROJECT NO: CD2656_004_160	DRAWING NO: CD2656_004_160_101-CAM-3_8	PAGE PL

FIGURE CAM-3.8

G:\CD2656\CAM-3\2014\FINAL\CD2656_004_160_101-CAM-3_8.dwg, PL, 2015-04-27 8:53:29 AM

9.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the NWS Landfill has been completed as per the TOR and is included as Table XXXII hereafter. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XXXII: Landfill Visual Inspection Photo Log – NWS Landfill

Site Name: CAM-3, Shepherd Bay
Landfill: West Landfill - North
Date Inspected: August 23, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (NWS-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C314_3006	4 381	14/08/22	12316	11549	View looking SE across cover of NWS Landfill from access road
2	C314_3007	4 336	14/08/22	12333	11565	View looking south at north side of NWS Landfill
3	C314_3008	4 436	14/08/22	12345	11551	View looking SW at northeast side of NWS Landfill
4	C314_3009	4 283	14/08/22	12353	11540	View looking SW at northeast side of NWS Landfill
5	C314_3010	4 375	14/08/22	12360	11524	View looking SW at northeast side of NWS Landfill
6	C314_3016	4 278	14/08/22	12326	11503	View looking NE at southwest side of NWS Landfill
7	C314_3017	4 278	14/08/22	12331	11512	View looking northeast at minor erosion on southwest side slope of NWS Landfill - FEATURE B (new)
8	C314_3018	4 410	14/08/22	12336	11517	View looking southwest at minor erosion on southwest side slope of NWS Landfill - FEATURE B (new)
9	C314_3019	4 404	14/08/22	12328	11524	View looking southwest at minor depression on southwest crest of NWS Landfill - FEATURE A (new)
10	C314_3020	4 339	14/08/22	12317	11518	View looking NE at southwest side of NWS Landfill
11	C314_3021	4 343	14/08/22	12309	11527	View looking NE at southwest side of NWS Landfill
Soil Sampling						
C3-19	C314_3004	4470	14/08/22	12307	11559	Sampling location C3-20 located upgradient of the NWS Landfill
S19	C314_3005	4296	14/08/22	12304	11561	View SE at C3-19 soil sample location
C3-20	C314_3012	4417	14/08/22	12365	11518	Sampling location C3-20 located downgradient of the NWS Landfill
S20	C314_3013	4426	14/08/22	12370	11516	View NW at C3-20 soil sample location
C3-21	C314_3014	4372	14/08/22	12330	11495	Sampling location C3-21 located downgradient of the NWS Landfill
S21	C314_3015	4285	14/08/22	12327	11491	View N at C3-21 soil sample location

9.5 SOIL SAMPLE ANALYTICAL DATA

The soil chemical analysis results for the 2014 NWS Landfill samples are presented in Table XXXIII 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 XXXIII: NWS Landfill Summary Table for Soil Analytical Data

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0.2	0.01	0.5	0.1	1.0	5.0	0.5	1	0.01	0.1	10	50	50
Upgradient Soil Samples															
C319-19A	C3-19	0-15	4.0	0.02	15.1	3.5	6.2	<5.0	9.4	14	<0.01	<0.1	<10	<50	<50
C319-19B		40-50	0.5	<0.01	3.9	1.2	1.6	<5.0	1.9	6	<0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C314-20A	C3-20	0-15	0.6	<0.01	2.9	1.2	1.4	<5.0	1.6	5	<0.01	<0.1	<10	<50	<50
C314-20B		40-50	0.7	<0.01	3.7	1.8	1.3	<5.0	2.5	8	<0.01	<0.1	<10	<50	<50
C314-21A	C3-21	0-15	0.8	<0.01	3,0	1.9	2.1	<4.9	1.7	8	<0.01	<0.1	<10	<50	<50
C314-21B		40-50	0.6	<0.01	4.7	1.7	1.6	<5.0	3.2	7	<0.01	<0.1	<10	<50	<50

ANNEX 1

LABORATORY RESULTS

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

T: (780) 438-5522
F: (780) 434-8586
E: Edmonton@exova.com
W www.exova.com

Exova

Sample Integrity Scorecard

Lots received between 'Aug 01, 2014' and 'Dec 05, 2014'

Client: sila

Sample Integrity Summary

	Total Lots	Total	Total Failed	% Passed
Process	5	3	2	60
Data Quality	5	4	1	80

Agreement: 105540 (Special Project - Cambridge Bay)

Lot ID: 1022226 PIN-3

Process

Was the waybill clearly filled in? Yes

Were the sample containers packaged well? Yes If No, please explain:

Was the COC received? Yes

Was the COC filled in adequately and legibly? Yes If No, please explain:

Was the COC received without damage? Yes If No, please explain:

Were Exova supplies used? No * If No, please explain: Maxxam containers

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? No * If No, please explain: See note.

Was the sample received in the prescribed temperature range? Yes Please provide temperature ℃:

Were all samples received intact (not damaged/broken)? No * If No, please explain: See note.

Were all samples received without adhesive tape sealing the lids? Yes If No, please explain:

For water samples only, were they received without a noticeable layer of sediment? Yes If No, please explain:

Was sufficient sample volume received? Yes If No, please explain:

Were non-conformance/verification notes entered into Sample Login for any of the above items that did not meet Exova's sample or COC requirements? Yes

Non-Conformances

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

Lot ID: 1022352 PIN-2

Process

Was the waybill clearly filled in? Yes

Were the sample containers packaged well? Yes If No, please explain:

Was the COC received? Yes

Was the COC filled in adequately and legibly? Yes If No, please explain:

Was the COC received without damage? Yes If No, please explain:

Were Exova supplies used? Yes If No, please explain:

Were the sample containers clearly labelled? Yes If No, please explain:

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

T: (780) 438-5522
F: (780) 434-8586
E: Edmonton@exova.com
W www.exova.com

Sample Integrity Scorecard

Lots received between 'Aug 01, 2014' and 'Dec 05, 2014'

Lot ID: 1022352 PIN-2

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:

Was the sample received in the prescribed temperature range? Yes Please provide temperature ℃: 4.0

Were all samples received intact (not damaged/broken)? Yes If No, please explain:

Were all samples received without adhesive tape sealing the lids? Yes If No, please explain:

For water samples only, were they received without a noticeable layer of sediment? Yes If No, please explain:

Was sufficient sample volume received? Yes If No, please explain:

Were non-conformance/verification notes entered into Sample Login for any of the above items that did not meet Exova's sample or COC requirements? Yes

Non-Conformances

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

Lot ID: 1023068 CAM-3

Process

Was the waybill clearly filled in? Yes

Were the sample containers packaged well? Yes If No, please explain:

Was the COC received? Yes

Was the COC filled in adequately and legibly? Yes If No, please explain:

Was the COC received without damage? Yes If No, please explain:

Were Exova supplies used? 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:

Was the sample received in the prescribed temperature range? Yes Please provide temperature ℃:

Were all samples received intact (not damaged/broken)? Yes If No, please explain:

Were all samples received without adhesive tape sealing the lids? Yes If No, please explain:

For water samples only, were they received without a noticeable layer of sediment? Yes If No, please explain:

Was sufficient sample volume received? Yes If No, please explain:

Were non-conformance/verification notes entered into Sample Login for any of the above items that did not meet Exova's sample or COC requirements? Yes

Non-Conformances

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

Lot ID: 1023106 PIN-4

Process

Was the waybill clearly filled in? Yes

Were the sample containers packaged well? Yes If No, please explain:

Was the COC received? Yes

Was the COC filled in adequately and legibly? Yes If No, please explain:

Was the COC received without damage? Yes If No, please explain:

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

T: (780) 438-5522
F: (780) 434-8586
E: Edmonton@exova.com
W www.exova.com

Sample Integrity Scorecard

Lots received between 'Aug 01, 2014' and 'Dec 05, 2014'

Lot ID: 1023106 PIN-4

Process

Were Exova supplies used? 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:

Was the sample received in the prescribed temperature range? Yes Please provide temperature ℃:

Were all samples received intact (not damaged/broken)? Yes If No, please explain:

Were all samples received without adhesive tape sealing the lids? Yes If No, please explain:

For water samples only, were they received without a noticeable layer of sediment? Yes If No, please explain:

Was sufficient sample volume received? Yes If No, please explain:

Were non-conformance/verification notes entered into Sample Login for any of the above items that did not meet Exova's sample or COC requirements? Yes

Non-Conformances

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

Lot ID: 1023703 CAM-1

Process

Was the waybill clearly filled in? Yes

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 * If No, please explain: see nots

Was the COC received without damage? Yes If No, please explain:

Were Exova supplies used? 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:

Was the sample received in the prescribed temperature range? Yes Please provide temperature ℃:

Were all samples received intact (not damaged/broken)? Yes If No, please explain:

Were all samples received without adhesive tape sealing the lids? Yes If No, please explain:

For water samples only, were they received without a noticeable layer of sediment? Yes If No, please explain:

Was sufficient sample volume received? Yes If No, please explain:

Were non-conformance/verification notes entered into Sample Login for any of the above items that did not meet Exova's sample or COC requirements? Yes

Non-Conformances

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

* is a non-conformance

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Contact & Affiliation	Address	Delivery Commitments
Accounts Payable Biogenie S.R.D.C. Inc.	350, rue Franquet Sainte-Foy, Quebec G1P 4P3 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: n/a	On [Lot Approval and Final Test Report Approval] send (Invoice) by Post M
Eric Thomassin-Lacroix Biogenie S.R.D.C. Inc.	350, rue Franquet Sainte-Foy, Quebec G1P 4P3 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: n/a	On [Lot Approval and Final Test Report Approval] send (COC, Test Report) by Post M
Andrew Passalis Biogenie S.R.D.C. Inc.	350, rue Franquet Sainte-Foy, Quebec G1P 4P3 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: andrew.passalis@gmail.com	On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report
Jean-Pierre Pelletier Biogenie S.R.D.C. Inc.	350, rue Franquet Sainte-Foy, Quebec G1P 4P3 Phone: (418) 653-4422 Fax: (418) 653-3583 Email: jean-peirre.pelletier@lvm.ca	On [Report Approval] send (Test Report, COC) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report

Notes To Clients:

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-1	1023068-2	1023068-3
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-1A	C314-1B	C314-2A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.48	0.89	0.60	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	1.3	1.1	1.1	0.2
Barium	Strong Acid Extractable	mg/kg	15	14	12	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.1	0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	4.9	4.9	4.6	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.1	1.9	2.0	0.1
Copper	Strong Acid Extractable	mg/kg	5.2	42.9	3.3	1
Lead	Strong Acid Extractable	mg/kg	<4.9	5.7	6.6	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	4.0	16.9	3.5	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.07	0.08	0.06	0.05
Tin	Strong Acid Extractable	mg/kg	3.1	3.1	6.0	1
Uranium	Strong Acid Extractable	mg/kg	0.6	0.8	1.4	0.5
Vanadium	Strong Acid Extractable	mg/kg	9.5	9.3	9.9	0.1
Zinc	Strong Acid Extractable	mg/kg	9	13	14	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-1	1023068-2	1023068-3
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C314-1A	C314-1B	C314-2A
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	10.60	12.50	4.22	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	120	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-4	1023068-5	1023068-6
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-2B	C314-3A	C314-3B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.34	0.78	0.35	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.1	1.3	1.4	0.2
Barium	Strong Acid Extractable	mg/kg	14	9	12	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.1	0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	<0.01	0.02	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	6.6	4.8	5.6	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.4	1.9	2.2	0.1
Copper	Strong Acid Extractable	mg/kg	5.4	4.1	3.9	1
Lead	Strong Acid Extractable	mg/kg	6.5	8.1	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.0	3.6	5.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.12	0.07	0.06	0.05
Tin	Strong Acid Extractable	mg/kg	3.2	3.6	3.1	1
Uranium	Strong Acid Extractable	mg/kg	0.6	0.6	0.6	0.5
Vanadium	Strong Acid Extractable	mg/kg	11.5	8.9	9.1	0.1
Zinc	Strong Acid Extractable	mg/kg	10	9	8	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-4	1023068-5	1023068-6	
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-2B	C314-3A	C314-3B	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	3.91	14.00	11.30	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	120	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Sep 8, 2014
Report Number: 1943953

Reference Number	1023068-7	1023068-8	1023068-9
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-4A	C314-4B	C314-5A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.36	0.40	0.34	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	0.01	0.02	0.01
Antimony	Strong Acid Extractable	mg/kg	0.4	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	3.1	3.8	3.7	0.2
Barium	Strong Acid Extractable	mg/kg	15	13	16	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.3	0.3	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.05	0.01	0.04	0.01
Chromium	Strong Acid Extractable	mg/kg	9.2	14.2	15.3	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.8	3.4	3.5	0.1
Copper	Strong Acid Extractable	mg/kg	4.5	5.2	5.6	1
Lead	Strong Acid Extractable	mg/kg	8.0	5.2	6.4	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	7.3	10.5	8.5	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	0.2	0.1	0.2	0.1
Thallium	Strong Acid Extractable	mg/kg	0.12	0.15	0.12	0.05
Tin	Strong Acid Extractable	mg/kg	3.2	3.1	3.1	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	0.5	0.7	0.5
Vanadium	Strong Acid Extractable	mg/kg	14.8	19.9	20.1	0.1
Zinc	Strong Acid Extractable	mg/kg	14	9	14	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

	Reference Number	1023068-7	1023068-8	1023068-9	
	Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-4A	C314-4B	C314-5A	
	Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	7.07	6.02	13.40	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	2.8	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	2.8	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	120	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-10	1023068-11	1023068-12
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-5B	C314-6A	C314-6B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.97	7.50	0.50	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.01	0.02	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	1.7	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	6.6	4.0	4.6	0.2
Barium	Strong Acid Extractable	mg/kg	17	12	20	1
Beryllium	Strong Acid Extractable	mg/kg	0.4	0.4	0.6	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.03	0.18	0.02	0.01
Chromium	Strong Acid Extractable	mg/kg	17.1	19.4	28.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.9	3.9	7.0	0.1
Copper	Strong Acid Extractable	mg/kg	5.7	12.0	10.1	1
Lead	Strong Acid Extractable	mg/kg	6.8	13.8	5.6	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	1.2	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	10.0	18.1	15.3	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	0.5	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	0.2	0.2	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.11	0.43	0.22	0.05
Tin	Strong Acid Extractable	mg/kg	3.6	3.2	2.8	1
Uranium	Strong Acid Extractable	mg/kg	0.6	3.0	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	22.2	20.9	36.6	0.1
Zinc	Strong Acid Extractable	mg/kg	12	52	14	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-10	1023068-11	1023068-12	
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-5B	C314-6A	C314-6B	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	25.80	24.10	12.60	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	110	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-13	1023068-14	1023068-15
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-7A	C314-7B	C314-8A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	1.14	1.26	0.33	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.04	0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	3.9	4.5	2.8	0.2
Barium	Strong Acid Extractable	mg/kg	22	18	12	1
Beryllium	Strong Acid Extractable	mg/kg	0.4	0.4	0.4	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.09	0.05	0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	17.4	17.4	16.6	0.5
Cobalt	Strong Acid Extractable	mg/kg	4.1	4.1	3.4	0.1
Copper	Strong Acid Extractable	mg/kg	7.8	6.5	5.5	1
Lead	Strong Acid Extractable	mg/kg	6.7	6.0	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	9.9	10.4	9.5	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	0.1	0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.21	0.19	0.11	0.05
Tin	Strong Acid Extractable	mg/kg	2.7	2.9	2.8	1
Uranium	Strong Acid Extractable	mg/kg	2.4	0.8	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	22.7	24.6	27.4	0.1
Zinc	Strong Acid Extractable	mg/kg	22	17	9	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	90	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

	Reference Number	1023068-13	1023068-14	1023068-15	
	Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-7A	C314-7B	C314-8A	
	Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	12.5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	41.70	12.00	7.53	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	120	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Sep 8, 2014
Report Number: 1943953

Reference Number	1023068-16	1023068-17	1023068-18
Sample Date	Aug 22, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-8B	C314-9A	C314-9B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.30	0.84	0.58	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.02	0.02	0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	0.6	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.7	1.9	1.7	0.2
Barium	Strong Acid Extractable	mg/kg	12	13	8	1
Beryllium	Strong Acid Extractable	mg/kg	0.4	0.1	0.2	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	0.07	0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	15.7	5.9	5.3	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	1.8	1.8	0.1
Copper	Strong Acid Extractable	mg/kg	5.4	5.9	2.5	1
Lead	Strong Acid Extractable	mg/kg	<4.9	11.7	<5.0	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	9.5	4.5	3.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.11	0.09	0.08	0.05
Tin	Strong Acid Extractable	mg/kg	2.8	3.4	3.1	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	26.3	9.2	9.5	0.1
Zinc	Strong Acid Extractable	mg/kg	8	49	11	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-16	1023068-17	1023068-18	
		Sample Date	Aug 22, 2014	Aug 23, 2014	Aug 23, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-8B	C314-9A	C314-9B	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	10.50	20.90	14.50	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	120	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-19	1023068-20	1023068-21
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-10A	C314-10B	C314-11A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	2.49	0.41	0.53	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	0.02	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	0.9	0.6	1.6	0.2
Barium	Strong Acid Extractable	mg/kg	10	9	11	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.1	0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.04	0.01	0.04	0.01
Chromium	Strong Acid Extractable	mg/kg	3.8	4.5	4.9	0.5
Cobalt	Strong Acid Extractable	mg/kg	1.8	1.5	1.6	0.1
Copper	Strong Acid Extractable	mg/kg	3.9	2.6	4.0	1
Lead	Strong Acid Extractable	mg/kg	<5.0	<5.0	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	4.5	1
Nickel	Strong Acid Extractable	mg/kg	4.5	2.9	2.9	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.08	0.1	0.06	0.05
Tin	Strong Acid Extractable	mg/kg	3.3	3.0	3.0	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	8.1	8.7	8.7	0.1
Zinc	Strong Acid Extractable	mg/kg	12	7	8	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	70	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-19	1023068-20	1023068-21	
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-10A	C314-10B	C314-11A	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	41.3	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	11.80	7.40	27.20	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	110	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-22	1023068-23	1023068-24
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-11B	C314-12A	C314-12B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.53	<0.20	<0.20	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.02	<0.01	0.02	0.01
Antimony	Strong Acid Extractable	mg/kg	0.4	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	1.5	2.7	3.1	0.2
Barium	Strong Acid Extractable	mg/kg	10	12	14	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.2	0.2	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.02	<0.01	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	5.1	6.8	8.2	0.5
Cobalt	Strong Acid Extractable	mg/kg	1.4	2.2	2.8	0.1
Copper	Strong Acid Extractable	mg/kg	2.4	2.7	4.0	1
Lead	Strong Acid Extractable	mg/kg	<5.0	<4.9	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	2.6	3.8	5.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	0.2	0.1
Thallium	Strong Acid Extractable	mg/kg	0.06	0.12	0.13	0.05
Tin	Strong Acid Extractable	mg/kg	3.0	3.0	3.1	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	8.4	12.2	14.4	0.1
Zinc	Strong Acid Extractable	mg/kg	7	9	9	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-22	1023068-23	1023068-24
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C314-11B	C314-12A	C314-12B
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	19.80	5.38	2.98	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	130	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-25	1023068-26	1023068-27
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-13A	C314-13B	C314-14A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.24	<0.20	0.44	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	1.8	1.2	4.8	0.2
Barium	Strong Acid Extractable	mg/kg	8	6	18	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.1	0.4	0.1
Cadmium	Strong Acid Extractable	mg/kg	<0.01	<0.01	0.02	0.01
Chromium	Strong Acid Extractable	mg/kg	5.9	4.0	17.7	0.5
Cobalt	Strong Acid Extractable	mg/kg	1.7	1.2	4.2	0.1
Copper	Strong Acid Extractable	mg/kg	2.3	2.0	7.4	1
Lead	Strong Acid Extractable	mg/kg	11.4	<4.9	6.5	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	1.0	1
Nickel	Strong Acid Extractable	mg/kg	3.6	2.3	8.4	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.07	0.05	0.13	0.05
Tin	Strong Acid Extractable	mg/kg	2.9	3.1	3.1	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	8.2	6.4	23.0	0.1
Zinc	Strong Acid Extractable	mg/kg	6	5	11	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

	Reference Number	1023068-25	1023068-26	1023068-27	
	Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-13A	C314-13B	C314-14A	
	Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	5.70	3.98	10.50	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	120	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-28	1023068-29	1023068-30
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-14B	C314-15A	C314-15B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	<0.20	0.28	0.28	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	5.2	5.5	3.3	0.2
Barium	Strong Acid Extractable	mg/kg	20	15	12	1
Beryllium	Strong Acid Extractable	mg/kg	0.5	0.4	0.3	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	0.02	0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	22.3	15.8	14.3	0.5
Cobalt	Strong Acid Extractable	mg/kg	5.3	4.4	3.0	0.1
Copper	Strong Acid Extractable	mg/kg	9.6	6.8	5.2	1
Lead	Strong Acid Extractable	mg/kg	6.7	10.0	5.3	5
Molybdenum	Strong Acid Extractable	mg/kg	1.1	1.8	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	11.7	9.5	6.5	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.15	0.13	0.12	0.05
Tin	Strong Acid Extractable	mg/kg	3.4	3.1	2.9	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	29.0	23.8	19.3	0.1
Zinc	Strong Acid Extractable	mg/kg	11	9	10	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-28	1023068-29	1023068-30
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C314-14B	C314-15A	C314-15B
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	8.44	13.40	10.20	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	130	130	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-31	1023068-32	1023068-33
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-16A	C314-16B	C314-17A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.83	0.46	5.99	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	0.04	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	0.3	0.2
Arsenic	Strong Acid Extractable	mg/kg	3.3	3.2	2.2	0.2
Barium	Strong Acid Extractable	mg/kg	17	18	24	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.4	0.2	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.02	<0.01	0.11	0.01
Chromium	Strong Acid Extractable	mg/kg	13.8	16.1	9.8	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	4.0	3.3	0.1
Copper	Strong Acid Extractable	mg/kg	6.8	6.4	7.8	1
Lead	Strong Acid Extractable	mg/kg	<5.0	5.6	<5.0	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	1.0	1
Nickel	Strong Acid Extractable	mg/kg	7.6	9.0	6.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.12	0.13	0.13	0.05
Tin	Strong Acid Extractable	mg/kg	2.8	3.0	2.8	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	7.9	0.5
Vanadium	Strong Acid Extractable	mg/kg	16.0	18.5	17.9	0.1
Zinc	Strong Acid Extractable	mg/kg	11	11	16	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	114	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-31	1023068-32	1023068-33	
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-16A	C314-16B	C314-17A	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	13.50	8.31	62.80	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	130	130	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-34	1023068-35	1023068-36
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-17B	C314-18A	C314-18B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	1.48	0.65	0.45	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.02	0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.9	4.3	4.0	0.2
Barium	Strong Acid Extractable	mg/kg	21	27	22	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.5	0.5	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.07	0.04	0.03	0.01
Chromium	Strong Acid Extractable	mg/kg	10.8	20.5	16.9	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.2	4.3	3.9	0.1
Copper	Strong Acid Extractable	mg/kg	6.5	7.4	5.9	1
Lead	Strong Acid Extractable	mg/kg	<5.0	7.0	5.3	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	1.1	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.0	8.4	8.0	0.5
Selenium	Strong Acid Extractable	mg/kg	0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.12	0.12	0.11	0.05
Tin	Strong Acid Extractable	mg/kg	2.7	2.7	2.8	1
Uranium	Strong Acid Extractable	mg/kg	2.1	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	17.8	27.6	24.7	0.1
Zinc	Strong Acid Extractable	mg/kg	14	17	15	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	61	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-34	1023068-35	1023068-36	
		Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-17B	C314-18A	C314-18B	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	10.2	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	35.00	18.00	10.80	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	130	130	130	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-37	1023068-38	1023068-39
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-19A	C314-19B	C314-20A
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	<0.20	<0.20	<0.20	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.0	0.5	0.6	0.2
Barium	Strong Acid Extractable	mg/kg	18	8	6	1
Beryllium	Strong Acid Extractable	mg/kg	0.4	0.1	<0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.02	<0.01	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	15.1	3.9	2.9	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	1.2	1.2	0.1
Copper	Strong Acid Extractable	mg/kg	6.2	1.6	1.4	1
Lead	Strong Acid Extractable	mg/kg	<5.0	<5.0	<5.0	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	9.4	1.9	1.6	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.08	<0.05	<0.05	0.05
Tin	Strong Acid Extractable	mg/kg	2.6	3.0	2.8	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	0.8	0.6	0.5
Vanadium	Strong Acid Extractable	mg/kg	22.6	6.7	6.1	0.1
Zinc	Strong Acid Extractable	mg/kg	14	6	5	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-37	1023068-38	1023068-39	
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-19A	C314-19B	C314-20A	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	2.17	2.95	4.42	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	110	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Sep 8, 2014
Report Number: 1943953

Reference Number	1023068-40	1023068-41	1023068-42
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-20B	C314-21A	C314-21B
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	<0.20	<0.20	<0.20	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	0.7	0.8	0.6	0.2
Barium	Strong Acid Extractable	mg/kg	9	11	10	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.1	<0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	3.7	3.0	4.7	0.5
Cobalt	Strong Acid Extractable	mg/kg	1.8	1.9	1.7	0.1
Copper	Strong Acid Extractable	mg/kg	1.3	2.1	1.6	1
Lead	Strong Acid Extractable	mg/kg	<5.0	<4.9	<5.0	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	2.5	1.7	3.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	<0.05	<0.05	<0.05	0.05
Tin	Strong Acid Extractable	mg/kg	3.0	2.9	2.9	1
Uranium	Strong Acid Extractable	mg/kg	0.5	<0.5	0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	8.6	8.8	8.0	0.1
Zinc	Strong Acid Extractable	mg/kg	8	8	7	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-40	1023068-41	1023068-42
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C314-20B	C314-21A	C314-21B
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	3.86	3.89	2.76	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	110	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-43	1023068-44	1023068-45
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-1WA	C314-1WB	C314-2WA
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	<0.20	<0.20	0.50	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.7	4.6	4.0	0.2
Barium	Strong Acid Extractable	mg/kg	18	16	14	1
Beryllium	Strong Acid Extractable	mg/kg	0.4	0.3	0.4	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	<0.01	0.02	0.01
Chromium	Strong Acid Extractable	mg/kg	13.8	11.6	16.9	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.7	3.6	3.6	0.1
Copper	Strong Acid Extractable	mg/kg	5.2	4.8	4.8	1
Lead	Strong Acid Extractable	mg/kg	7.1	22.8	6.2	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	9.0	10.2	7.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.19	0.18	0.08	0.05
Tin	Strong Acid Extractable	mg/kg	2.8	23.7	3.5	1
Uranium	Strong Acid Extractable	mg/kg	0.6	0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	21.2	19.2	19.9	0.1
Zinc	Strong Acid Extractable	mg/kg	14	13	11	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-43	1023068-44	1023068-45	
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-1WA	C314-1WB	C314-2WA	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	6.31	4.75	12.30	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	120	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-46	1023068-47	1023068-48
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-2WB	C314-3WA	C314-3WB
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.21	6.77	0.49	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	0.04	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	3.7	10.0	5.1	0.2
Barium	Strong Acid Extractable	mg/kg	13	21	13	1
Beryllium	Strong Acid Extractable	mg/kg	0.4	0.3	0.3	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	0.11	0.02	0.01
Chromium	Strong Acid Extractable	mg/kg	15.3	12.8	13.5	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	3.4	3.2	0.1
Copper	Strong Acid Extractable	mg/kg	4.4	8.5	4.0	1
Lead	Strong Acid Extractable	mg/kg	5.7	5.1	7.5	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	1.3	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.0	7.0	5.8	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	0.4	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	0.2	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.07	0.14	0.07	0.05
Tin	Strong Acid Extractable	mg/kg	2.7	2.8	2.8	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	9.8	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	18.0	15.6	15.9	0.1
Zinc	Strong Acid Extractable	mg/kg	9	24	9	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	98	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-46	1023068-47	1023068-48	
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-2WB	C314-3WA	C314-3WB	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	8.02	58.90	10.80	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	110	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-49	1023068-50	1023068-51
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-4WA	C314-4WB	C314-5WA
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.38	0.30	0.31	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.6	3.7	4.0	0.2
Barium	Strong Acid Extractable	mg/kg	11	13	15	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.2	0.5	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	<0.01	0.03	0.01
Chromium	Strong Acid Extractable	mg/kg	11.1	10.3	21.3	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.4	2.9	5.2	0.1
Copper	Strong Acid Extractable	mg/kg	5.2	4.5	7.7	1
Lead	Strong Acid Extractable	mg/kg	5.8	5.0	8.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.5	5.5	11.8	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.14	0.09	0.13	0.05
Tin	Strong Acid Extractable	mg/kg	2.9	2.9	2.7	1
Uranium	Strong Acid Extractable	mg/kg	0.5	0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	17.1	16.4	29.5	0.1
Zinc	Strong Acid Extractable	mg/kg	9	8	12	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

	Reference Number	1023068-49	1023068-50	1023068-51	
	Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-4WA	C314-4WB	C314-5WA	
	Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	38.7	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	9.01	6.23	15.60	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	130	120	130	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Sep 8, 2014
Report Number: 1943953

Reference Number	1023068-52	1023068-53	1023068-54
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-5WB	C314-6WA	C314-6WB
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.30	0.35	0.60	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.2	3.0	5.4	0.2
Barium	Strong Acid Extractable	mg/kg	16	12	16	1
Beryllium	Strong Acid Extractable	mg/kg	0.5	0.4	0.4	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.03	0.07	0.13	0.01
Chromium	Strong Acid Extractable	mg/kg	23.9	17.4	17.4	0.5
Cobalt	Strong Acid Extractable	mg/kg	5.2	3.7	4.1	0.1
Copper	Strong Acid Extractable	mg/kg	8.7	5.8	6.8	1
Lead	Strong Acid Extractable	mg/kg	9.1	<4.9	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	12.9	8.6	8.5	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.15	0.1	0.11	0.05
Tin	Strong Acid Extractable	mg/kg	2.8	2.6	2.7	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	31.1	23.5	24.1	0.1
Zinc	Strong Acid Extractable	mg/kg	14	10	12	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

	Reference Number	1023068-52	1023068-53	1023068-54	
	Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-5WB	C314-6WA	C314-6WB	
	Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	53.7	<5	58.2	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	13.90	13.50	16.50	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	120	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Sep 8, 2014
Report Number: 1943953

Reference Number	1023068-55	1023068-56	1023068-57
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-7WA	C314-7WB	C314-12WA
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.31	0.38	0.23	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	5.9	5.6	0.4	0.2
Barium	Strong Acid Extractable	mg/kg	10	12	6	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.2	<0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	0.02	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	11.8	11.6	3.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	3.5	3.4	1.1	0.1
Copper	Strong Acid Extractable	mg/kg	4.8	4.0	<1.0	1
Lead	Strong Acid Extractable	mg/kg	5.3	<4.9	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.3	6.7	1.8	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.08	0.11	<0.05	0.05
Tin	Strong Acid Extractable	mg/kg	2.8	2.9	3.0	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	17.9	16.7	6.0	0.1
Zinc	Strong Acid Extractable	mg/kg	7	9	6	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number		1023068-55	1023068-56	1023068-57
Sample Date		Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time		NA	NA	NA
Sample Location				
Sample Description		C314-7WA	C314-7WB	C314-12WA
Matrix		Soil	Soil	Soil

Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	10.70	13.00	11.40	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	120	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-58	1023068-59	1023068-60
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-12WB	C314-13WA	C314-13WB
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	<0.20	0.46	0.27	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	0.7	0.8	1.1	0.2
Barium	Strong Acid Extractable	mg/kg	8	11	10	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.2	0.2	0.1
Cadmium	Strong Acid Extractable	mg/kg	<0.01	0.01	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	3.4	4.6	5.4	0.5
Cobalt	Strong Acid Extractable	mg/kg	1.5	1.8	1.9	0.1
Copper	Strong Acid Extractable	mg/kg	1.3	1.4	3.3	1
Lead	Strong Acid Extractable	mg/kg	<5.0	<4.9	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	1.7	2.2	2.9	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	<0.05	0.06	0.08	0.05
Tin	Strong Acid Extractable	mg/kg	3.2	2.9	3.0	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	0.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	8.3	8.9	10.1	0.1
Zinc	Strong Acid Extractable	mg/kg	8	8	9	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-58	1023068-59	1023068-60
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C314-12WB	C314-13WA	C314-13WB
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	5.08	12.20	11.70	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	120	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-61	1023068-62	1023068-63
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-14WA	C314-14WB	C314-15WA
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	6.11	<0.20	7.19	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	0.05	<0.01	0.03	0.01
Antimony	Strong Acid Extractable	mg/kg	0.9	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.4	2.3	1.4	0.2
Barium	Strong Acid Extractable	mg/kg	33	36	17	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.4	<0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.11	0.01	0.10	0.01
Chromium	Strong Acid Extractable	mg/kg	9.7	11.6	3.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.7	4.9	1.7	0.1
Copper	Strong Acid Extractable	mg/kg	10.0	6.6	15.8	1
Lead	Strong Acid Extractable	mg/kg	<4.9	8.1	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	4.5	7.9	4.2	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	0.3	0.2	0.1
Thallium	Strong Acid Extractable	mg/kg	0.06	0.15	0.07	0.05
Tin	Strong Acid Extractable	mg/kg	3.4	2.9	3.4	1
Uranium	Strong Acid Extractable	mg/kg	9.5	0.7	3.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	10.9	21.0	6.8	0.1
Zinc	Strong Acid Extractable	mg/kg	47	18	12	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	102	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-61	1023068-62	1023068-63	
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-14WA	C314-14WB	C314-15WA	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	125	100
% C50+		%	<5	<5	29.2	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	47.80	11.60	67.20	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	110	120	110	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-64	1023068-65	1023068-66
Sample Date	Aug 22, 2014	Aug 23, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-15WB	C314-BD1	C314-BD2
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.27	5.19	0.78	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	0.04	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	2.1	3.6	1.4	0.2
Barium	Strong Acid Extractable	mg/kg	33	21	10	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.4	0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.02	0.10	<0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	11.1	15.2	5.0	0.5
Cobalt	Strong Acid Extractable	mg/kg	4.2	3.9	1.8	0.1
Copper	Strong Acid Extractable	mg/kg	5.5	7.1	4.2	1
Lead	Strong Acid Extractable	mg/kg	6.3	5.9	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	6.6	8.7	2.3	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	0.4	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	0.2	0.2	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.17	0.19	0.08	0.05
Tin	Strong Acid Extractable	mg/kg	2.8	2.7	3.1	1
Uranium	Strong Acid Extractable	mg/kg	0.6	2.5	<0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	19.3	21.1	9.5	0.1
Zinc	Strong Acid Extractable	mg/kg	17	24	14	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-64	1023068-65	1023068-66
		Sample Date	Aug 22, 2014	Aug 23, 2014	Aug 22, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C314-15WB	C314-BD1	C314-BD2
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	11.30	36.60	3.80	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	120	110	120	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-67	1023068-68	1023068-69
Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-BD3	C314-BD4	C314-BD5
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.31	0.47	0.20	0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	<0.01	<0.01	0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2	<0.2	0.2
Arsenic	Strong Acid Extractable	mg/kg	4.1	3.7	1.3	0.2
Barium	Strong Acid Extractable	mg/kg	16	13	16	1
Beryllium	Strong Acid Extractable	mg/kg	0.5	0.3	0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.03	0.02	0.01	0.01
Chromium	Strong Acid Extractable	mg/kg	23.8	15.0	6.0	0.5
Cobalt	Strong Acid Extractable	mg/kg	5.2	3.2	2.2	0.1
Copper	Strong Acid Extractable	mg/kg	8.7	4.5	3.1	1
Lead	Strong Acid Extractable	mg/kg	8.9	5.3	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	12.9	6.1	3.8	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1	<0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.16	0.08	0.08	0.05
Tin	Strong Acid Extractable	mg/kg	2.9	2.9	3.0	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	0.6	0.5	0.5
Vanadium	Strong Acid Extractable	mg/kg	33.0	18.6	10.5	0.1
Zinc	Strong Acid Extractable	mg/kg	14	11	10	1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010	<0.010	0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14	29-Aug-14	
F1 C6-C10	Dry Weight	mg/kg	<10	<10	<10	10
F1 -BTEX	Dry Weight	mg/kg	<10	<10	<10	10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14	29-Aug-14	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

		Reference Number	1023068-67	1023068-68	1023068-69	
		Sample Date	Aug 22, 2014	Aug 22, 2014	Aug 22, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C314-BD3	C314-BD4	C314-BD5	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
Silica Gel Cleanup						
Silica Gel Cleanup			Done	Done	Done	
Soil % Moisture						
Moisture	Soil % Moisture	% by weight	14.00	12.90	11.80	
Polychlorinated Biphenyls - Soil						
Aroclor 1016	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1221	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1232	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1242	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1248	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1254	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1260	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1262	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Aroclor 1268	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Total PCBs	Dry Weight	mg/kg	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Soil - Surrogate						
Decachlorobiphenyl	Surrogate	%	130	130	130	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number		1023068-70	1023068-71
Sample Date		Aug 23, 2014	Aug 23, 2014
Sample Time		NA	NA
Sample Location			
Sample Description		C314-BD6	C314-BD7
Matrix		Soil	Soil

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Hot Water Soluble						
Boron	Hot Water Soluble	mg/kg	0.37	0.55		0.2
Metals Strong Acid Digestion						
Mercury	Strong Acid Extractable	mg/kg	<0.01	0.02		0.01
Antimony	Strong Acid Extractable	mg/kg	<0.2	<0.2		0.2
Arsenic	Strong Acid Extractable	mg/kg	4.3	1.5		0.2
Barium	Strong Acid Extractable	mg/kg	14	8		1
Beryllium	Strong Acid Extractable	mg/kg	0.4	<0.1		0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	0.02		0.01
Chromium	Strong Acid Extractable	mg/kg	16.3	3.9		0.5
Cobalt	Strong Acid Extractable	mg/kg	3.4	1.3		0.1
Copper	Strong Acid Extractable	mg/kg	7.4	2.3		1
Lead	Strong Acid Extractable	mg/kg	5.4	<5.0		5
Molybdenum	Strong Acid Extractable	mg/kg	1.0	<1.0		1
Nickel	Strong Acid Extractable	mg/kg	7.6	2.2		0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3		0.3
Silver	Strong Acid Extractable	mg/kg	<0.1	<0.1		0.1
Thallium	Strong Acid Extractable	mg/kg	0.12	<0.05		0.05
Tin	Strong Acid Extractable	mg/kg	2.8	2.9		1
Uranium	Strong Acid Extractable	mg/kg	<0.5	<0.5		0.5
Vanadium	Strong Acid Extractable	mg/kg	22.2	6.5		0.1
Zinc	Strong Acid Extractable	mg/kg	10	6		1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14		
Benzene	Dry Weight	mg/kg	<0.005	<0.005		0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.02		0.02
Ethylbenzene	Dry Weight	mg/kg	<0.010	<0.010		0.010
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03		0.03
Volatile Petroleum Hydrocarbons - Soil						
Extraction Date	Volatiles		29-Aug-14	29-Aug-14		
F1 C6-C10	Dry Weight	mg/kg	<10	<10		10
F1 -BTEX	Dry Weight	mg/kg	<10	<10		10
Extractable Petroleum Hydrocarbons - Soil						
Extraction Date	Total Extractables		29-Aug-14	29-Aug-14		
F2c C10-C16	Dry Weight	mg/kg	<50	<50		50
F3c C16-C34	Dry Weight	mg/kg	<50	<50		50
F4c C34-C50	Dry Weight	mg/kg	<100	<100		100

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:		Lot ID:	**1023068**
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014	Control Number:	
	350, rue Franquet	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay	Date Reported:	Sep 8, 2014
	G1P 4P3	LSD:		Report Number:	1943953
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

			Reference Number	1023068-70	1023068-71		
			Sample Date	Aug 23, 2014	Aug 23, 2014		
			Sample Time	NA	NA		
			Sample Location				
			Sample Description	C314-BD6	C314-BD7		
			Matrix	Soil	Soil		
Analyte		**Units**		**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued							
F4HTGCc C34-C50+	Dry Weight	mg/kg		<100	<100		100
% C50+		%		<5	46.0		
Silica Gel Cleanup							
Silica Gel Cleanup				Done	Done		
Soil % Moisture							
Moisture	Soil % Moisture	% by weight		12.00	28.60		
Polychlorinated Biphenyls - Soil							
Aroclor 1016	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1221	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1232	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1242	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1248	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1254	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1260	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1262	Dry Weight	mg/kg		<0.1	<0.1		0.1
Aroclor 1268	Dry Weight	mg/kg		<0.1	<0.1		0.1
Total PCBs	Dry Weight	mg/kg		<0.1	<0.1		0.1
Polychlorinated Biphenyls - Soil - Surrogate							
Decachlorobiphenyl	Surrogate	%		130	110		50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number	1023068-72	1023068-73	1023068-74
Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C314-5W	C314-7W	C314-13W
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total						
Aluminum	Total	mg/L	1.5	0.94	23.7	0.02
Calcium	Total	mg/L	401	202	218	0.2
Iron	Total	mg/L	1.4	0.98	22.4	0.05
Magnesium	Total	mg/L	144	73.2	196	0.2
Manganese	Total	mg/L	0.064	0.039	0.402	0.005
Potassium	Total	mg/L	20.1	15.2	23.2	0.4
Silicon	Total	mg/L	7.46	4.27	35.6	0.05
Sodium	Total	mg/L	283	107	199	0.4
Sulfur	Total	mg/L	304	172	39.2	0.3
Antimony	Total	mg/L	<0.0004	0.0002	0.0005	0.0002
Arsenic	Total	mg/L	0.001	0.0011	0.010	0.0002
Barium	Total	mg/L	0.042	0.030	0.16	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	0.0007	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.001	0.0005
Boron	Total	mg/L	0.18	0.317	0.13	0.002
Cadmium	Total	mg/L	0.00010	0.00021	0.00020	0.00001
Chromium	Total	mg/L	0.013	0.0081	0.0538	0.0005
Cobalt	Total	mg/L	0.0046	0.0016	0.0087	0.0001
Copper	Total	mg/L	0.01	0.005	0.026	0.001
Lead	Total	mg/L	0.0008	0.0007	0.013	0.0001
Lithium	Total	mg/L	0.18	0.052	0.11	0.001
Molybdenum	Total	mg/L	0.002	0.004	0.008	0.001
Nickel	Total	mg/L	0.0265	0.0098	0.0345	0.0005
Selenium	Total	mg/L	<0.0004	0.0003	0.0022	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	0.00016	0.00001
Strontium	Total	mg/L	0.319	0.255	0.449	0.001
Thallium	Total	mg/L	<0.0001	0.00011	0.00040	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.002	0.001
Titanium	Total	mg/L	0.0673	0.0551	1.42	0.0005
Uranium	Total	mg/L	0.013	0.0051	0.010	0.0005
Vanadium	Total	mg/L	0.0029	0.0028	0.0513	0.0001
Zinc	Total	mg/L	1.65	0.966	0.628	0.001
Zirconium	Total	mg/L	0.002	0.001	0.008	0.001
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.001	<0.001	<0.001	0.001

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:		Lot ID:	**1023068**
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014	Control Number:	
	350, rue Franquet	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay	Date Reported:	Sep 8, 2014
	G1P 4P3	LSD:		Report Number:	1943953
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

	Reference Number	1023068-72	1023068-73	1023068-74	
	Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-5W	C314-7W	C314-13W	
	Matrix	Water	Water	Water	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water - Continued					
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	0.001
Total Xylenes (m,p,o)	mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2	<0.2	0.2
F1 C6-C10	mg/L	<0.2	<0.2	<0.2	0.2
F2 C10-C16	mg/L	<0.2	<0.2	<0.2	0.2
Extractable Petroleum Hydrocarbons - Water					
F3 C16-C34	mg/L	<0.1	<0.1	<0.1	0.1
F3+ C34+	mg/L	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Water					
Aroclor 1016	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1221	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1232	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1242	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1248	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1254	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1260	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1262	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1268	ug/L	<0.1	<0.1	<0.1	0.1
Total PCBs	ug/L	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Water - Surrogate					
Decachlorobiphenyl Surrogate	%	71	69	77	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Reference Number		1023068-75	1023068-76	1023068-77
Sample Date		Aug 23, 2014	Aug 23, 2014	Aug 23, 2014
Sample Time		NA	NA	NA
Sample Location				
Sample Description		C314-14W	C314-15W	C314-BDW1
Matrix		Water	Water	Water

Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total						
Aluminum	Total	mg/L	8.36	13.2	13.1	0.02
Calcium	Total	mg/L	165	166	169	0.2
Iron	Total	mg/L	12.0	23.2	22.8	0.05
Magnesium	Total	mg/L	118	70.7	71.3	0.2
Manganese	Total	mg/L	0.316	0.321	0.320	0.005
Potassium	Total	mg/L	9.6	13.8	13.9	0.4
Silicon	Total	mg/L	15.9	16.7	16.4	0.05
Sodium	Total	mg/L	134	259	261	0.4
Sulfur	Total	mg/L	136	146	146	0.3
Antimony	Total	mg/L	0.0003	0.0006	0.0006	0.0002
Arsenic	Total	mg/L	0.0061	0.0152	0.0157	0.0002
Barium	Total	mg/L	0.089	0.070	0.072	0.001
Beryllium	Total	mg/L	0.0004	0.0006	0.0005	0.0001
Bismuth	Total	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.046	0.147	0.150	0.002
Cadmium	Total	mg/L	0.00026	0.00030	0.00032	0.00001
Chromium	Total	mg/L	0.0340	0.0947	0.0929	0.0005
Cobalt	Total	mg/L	0.0050	0.0083	0.0087	0.0001
Copper	Total	mg/L	0.038	0.037	0.038	0.001
Lead	Total	mg/L	0.0089	0.0089	0.0092	0.0001
Lithium	Total	mg/L	0.066	0.052	0.052	0.001
Molybdenum	Total	mg/L	0.005	0.008	0.008	0.001
Nickel	Total	mg/L	0.0379	0.0803	0.0776	0.0005
Selenium	Total	mg/L	0.0022	0.0020	0.0021	0.0002
Silver	Total	mg/L	0.00008	0.00011	0.00012	0.00001
Strontium	Total	mg/L	0.187	0.351	0.354	0.001
Thallium	Total	mg/L	0.00026	0.00025	0.00025	0.00005
Tin	Total	mg/L	<0.001	0.001	0.001	0.001
Titanium	Total	mg/L	0.529	1.27	1.31	0.0005
Uranium	Total	mg/L	0.0158	0.0250	0.0254	0.0005
Vanadium	Total	mg/L	0.0273	0.0559	0.0575	0.0001
Zinc	Total	mg/L	0.512	0.111	0.117	0.001
Zirconium	Total	mg/L	0.003	0.01	0.01	0.001
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.001	<0.001	<0.001	0.001

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Sep 8, 2014
Report Number: 1943953

	Reference Number	1023068-75	1023068-76	1023068-77	
	Sample Date	Aug 23, 2014	Aug 23, 2014	Aug 23, 2014	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	C314-14W	C314-15W	C314-BDW1	
	Matrix	Water	Water	Water	
Analyte	**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water - Continued					
Ethylbenzene	mg/L	<0.001	<0.001	<0.001	0.001
Total Xylenes (m,p,o)	mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2	<0.2	0.2
F1 C6-C10	mg/L	<0.2	<0.2	<0.2	0.2
F2 C10-C16	mg/L	<0.2	<0.2	<0.2	0.2
Extractable Petroleum Hydrocarbons - Water					
F3 C16-C34	mg/L	<0.1	<0.1	<0.1	0.1
F3+ C34+	mg/L	0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Water					
Aroclor 1016	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1221	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1232	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1242	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1248	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1254	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1260	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1262	ug/L	<0.1	<0.1	<0.1	0.1
Aroclor 1268	ug/L	<0.1	<0.1	<0.1	0.1
Total PCBs	ug/L	<0.1	<0.1	<0.1	0.1
Polychlorinated Biphenyls - Water - Surrogate					
Decachlorobiphenyl Surrogate	%	80	75	64	50-150

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:		Lot ID:	**1023068**
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014	Control Number:	
	350, rue Franquet	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay	Date Reported:	Sep 8, 2014
	G1P 4P3	LSD:		Report Number:	1943953
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

Reference Number		1023068-78	1023068-79	
Sample Date		Aug 23, 2014	Aug 23, 2014	
Sample Time		NA	NA	
Sample Location				
Sample Description		C314-FB	C314/C514/TB P414 (Trip Blank)	
Matrix		Water	Water	
Analyte	**Units**	**Results**	**Results**	**Results**
Metals Total				
Aluminum Total	mg/L	<0.02	<0.02	0.02
Calcium Total	mg/L	<0.2	<0.2	0.2
Iron Total	mg/L	<0.05	<0.05	0.05
Magnesium Total	mg/L	<0.20	<0.20	0.2
Manganese Total	mg/L	<0.005	<0.005	0.005
Potassium Total	mg/L	<0.4	<0.4	0.4
Silicon Total	mg/L	0.11	0.11	0.05
Sodium Total	mg/L	<0.4	<0.4	0.4
Sulfur Total	mg/L	<0.3	<0.3	0.3
Antimony Total	mg/L	<0.0002	<0.0002	0.0002
Arsenic Total	mg/L	<0.0002	<0.0002	0.0002
Barium Total	mg/L	<0.001	<0.001	0.001
Beryllium Total	mg/L	<0.0001	<0.0001	0.0001
Bismuth Total	mg/L	<0.0005	<0.0005	0.0005
Boron Total	mg/L	<0.002	<0.002	0.002
Cadmium Total	mg/L	<0.00001	<0.00001	0.00001
Chromium Total	mg/L	<0.0005	<0.0005	0.0005
Cobalt Total	mg/L	<0.0001	<0.0001	0.0001
Copper Total	mg/L	<0.001	<0.001	0.001
Lead Total	mg/L	<0.0001	<0.0001	0.0001
Lithium Total	mg/L	<0.001	<0.001	0.001
Molybdenum Total	mg/L	<0.001	<0.001	0.001
Nickel Total	mg/L	<0.0005	<0.0005	0.0005
Selenium Total	mg/L	<0.0002	<0.0002	0.0002
Silver Total	mg/L	<0.00001	<0.00001	0.00001
Strontium Total	mg/L	<0.001	<0.001	0.001
Thallium Total	mg/L	<0.00005	<0.00005	0.00005
Tin Total	mg/L	<0.001	<0.001	0.001
Titanium Total	mg/L	0.0007	<0.0005	0.0005
Uranium Total	mg/L	<0.0005	<0.0005	0.0005
Vanadium Total	mg/L	0.0002	0.0001	0.0001
Zinc Total	mg/L	0.001	<0.001	0.001
Zirconium Total	mg/L	<0.001	<0.001	0.001
Mono-Aromatic Hydrocarbons - Water				
Benzene	mg/L	<0.001	<0.001	0.001
Toluene	mg/L	<0.001	<0.001	0.001

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:		Lot ID:	**1023068**
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014	Control Number:	
	350, rue Franquet	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay	Date Reported:	Sep 8, 2014
	G1P 4P3	LSD:		Report Number:	1943953
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

Reference Number	1023068-78	1023068-79	
Sample Date	Aug 23, 2014	Aug 23, 2014	
Sample Time	NA	NA	
Sample Location			
Sample Description	C314-FB	C314/C514/TB P414 (Trip Blank)	
Matrix	Water	Water	

Analyte	Units	Results	Results	Results	Nominal Detection Limit
Mono-Aromatic Hydrocarbons - Water - Continued					
Ethylbenzene	mg/L	<0.001	<0.001		0.001
Total Xylenes (m,p,o)	mg/L	<0.001	<0.001		0.001
Volatile Petroleum Hydrocarbons - Water					
F1 -BTEX	mg/L	<0.2	<0.2		0.2
F1 C6-C10	mg/L	<0.2	<0.2		0.2
F2 C10-C16	mg/L	<0.2	<0.2		0.2
Extractable Petroleum Hydrocarbons - Water					
F3 C16-C34	mg/L	<0.1	<0.1		0.1
F3+ C34+	mg/L	<0.1	<0.1		0.1
Polychlorinated Biphenyls - Water					
Aroclor 1016	ug/L	<0.1	<0.1		0.1
Aroclor 1221	ug/L	<0.1	<0.1		0.1
Aroclor 1232	ug/L	<0.1	<0.1		0.1
Aroclor 1242	ug/L	<0.1	<0.1		0.1
Aroclor 1248	ug/L	<0.1	<0.1		0.1
Aroclor 1254	ug/L	<0.1	<0.1		0.1
Aroclor 1260	ug/L	<0.1	<0.1		0.1
Aroclor 1262	ug/L	<0.1	<0.1		0.1
Aroclor 1268	ug/L	<0.1	<0.1		0.1
Total PCBs	ug/L	<0.1	<0.1		0.1
Polychlorinated Biphenyls - Water - Surrogate					
Decachlorobiphenyl Surrogate	%	81	98		50-150

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	McKeague	*	Hot Water Soluble Boron - Azomethine-H Method, 4.61	29-Aug-14	Exova Edmonton
BTEX-CCME - Soil	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	28-Aug-14	Exova Calgary
BTEX-CCME - Soil	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	28-Aug-14	Exova Calgary
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	04-Sep-14	Exova Calgary
Mercury (Hot Block) in Soil	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	29-Aug-14	Exova Edmonton
Mercury (Hot Block) in Soil	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	02-Sep-14	Exova Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	*	Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	29-Aug-14	Exova Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	*	Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	02-Sep-14	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	02-Sep-14	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	02-Sep-14	Exova Edmonton
PCB - Soil	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	28-Aug-14	Exova Calgary
PCB - Water	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	02-Sep-14	Exova Calgary

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943953

Method Name	Reference		Method	Date Analysis Started	Location
TEH-CCME - Water	EPA/CCME	*	Separatory Funnel Liquid-liquid Extraction/CCME, EPA 3510/CCME	29-Aug-14	Exova Calgary
TEH-CCME-Soil (Shake)	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	28-Aug-14	Exova Calgary

** Reference Method Modified*

References

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

Comments:

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:		Lot ID:	**1023068**
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-3 2014	Control Number:	
	350, rue Franquet	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Sainte-Foy, QC, Canada	Location:	Sheperd Bay	Date Reported:	Sep 8, 2014
	G1P 4P3	LSD:		Report Number:	1943953
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

Petroleum Hydrocarbons in Soil

Batch Notes

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

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Your Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Your C.O.C. #: A159155

Attention: JEAN-PIERRE PELLETIER

SILA REMEDIATION
4495 BL. WILFRID- HAMEL, BUR 1
QUEBEC, PQ
CANADA G1P 2T7

Report Date: 2014/09/22
Report #: R1647077
Version: 4R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B478367
Received: 2014/09/04, 10:45

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	7	2014/09/05	2014/09/08	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons (F2-F4 in soil)	7	2014/09/05	2014/09/09	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS
Elements by ICPMS - Soils	7	2014/09/10	2014/09/10	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Moisture	7	N/A	2014/09/06	AB SOP-00002	CCME PHC-CWS
Polychlorinated Biphenyls (1)	7	2014/09/06	2014/09/08	CAL SOP-00149	EPA 8082A R1 m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	1	N/A	2014/09/05	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons (F2-F4 in water)	1	2014/09/06	2014/09/07	AB SOP-00037 / AB SOP-00040	CCME PHC-CWS m
Mercury - Low Level (Total) (1)	1	2014/09/09	2014/09/09	CAL SOP-00007	EPA 1631 RE 20460 m
Elements by ICPMS - Total	1	2014/09/09	2014/09/09	AB SOP-00014 / AB SOP-00043	EPA 200.8 R5.4 m
Polychlorinated Biphenyls (1)	1	2014/09/06	2014/09/09	CAL SOP-00149	EPA 8082A R1 m

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

(1) This test was performed by Maxxam Calgary Environmental

Your Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Your C.O.C. #: A159155

Attention: JEAN-PIERRE PELLETIER

SILA REMEDIATION
4495 BL. WILFRID- HAMEL, BUR 1
QUEBEC, PQ
CANADA G1P 2T7

Report Date: 2014/09/22
Report #: R1647077
Version: 4R

CERTIFICATE OF ANALYSIS – REVISED REPORT

Encryption Key

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

Tanya Eugine, M.Sc., Project Manager
Email: TEugine@maxxam.ca
Phone# (780) 577-7144

==========

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 Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		KN2771	KN2772	KN2773	KN2774	KN2775	KN2776		
Sampling Date		2014/08/22	2014/08/23	2014/08/22	2014/08/22	2014/08/22	2014/08/23		
COC Number		A159155	A159155	A159155	A159155	A159155	A159155		
	UNITS	**C314-7A**	**C314-2A**	**C314-5WB**	**C314-2WA**	**C314-13WB**	**C314-15B**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	46	4.5	15	13	9.7	15	0.30	7627619
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	10	7627782
F3 (C16-C34 Hydrocarbons)	mg/kg	170	<50	<50	<50	<50	<50	50	7627782
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	Yes		7627782
Volatiles									
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	<12	12	7627727
(C6-C10)	mg/kg	<12	<12	<12	<12	<12	<12	12	7627727
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	123	102	105	105	104	104		7627727
4-Bromofluorobenzene (sur.)	%	99	100	99	100	100	99		7627727
D10-ETHYLBENZENE (sur.)	%	105	108	107	105	107	103		7627727
D4-1,2-Dichloroethane (sur.)	%	93	90	92	96	92	93		7627727
O-TERPHENYL (sur.)	%	95	86	91	99	93	84		7627782

RDL = Reportable Detection Limit

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		KN2777		
Sampling Date		2014/08/23		
COC Number		A159155		
	UNITS	**C314-11A**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	55	0.30	7627619
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<22 (1)	22	7627782
F3 (C16-C34 Hydrocarbons)	mg/kg	160 (1)	110	7627782
Reached Baseline at C50	mg/kg	Yes		7627782
Volatiles				
F1 (C6-C10) - BTEX	mg/kg	<27 (1)	27	7627727
(C6-C10)	mg/kg	<27 (1)	27	7627727
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	127		7627727
4-Bromofluorobenzene (sur.)	%	98		7627727
D10-ETHYLBENZENE (sur.)	%	101		7627727
D4-1,2-Dichloroethane (sur.)	%	93		7627727
O-TERPHENYL (sur.)	%	102		7627782

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		KN2778		
Sampling Date		2014/08/23		
COC Number		A159155		
	UNITS	**C314-15W**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.71 (1)	0.71	7623510
F3 (C16-C34 Hydrocarbons)	mg/L	<1.4 (1)	1.4	7623510
Reached Baseline at C50	mg/L	Yes		7623510
Volatiles				
F1 (C6-C10) - BTEX	ug/L	<100	100	7627246
(C6-C10)	ug/L	<100	100	7627246
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	100		7627246
4-Bromofluorobenzene (sur.)	%	98		7627246
D4-1,2-Dichloroethane (sur.)	%	99		7627246
O-TERPHENYL (sur.)	%	83		7623510

RDL = Reportable Detection Limit
(1) Detection limit raised based on sample volume used for analysis.

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		KN2771	KN2772	KN2773	KN2774	KN2775		
Sampling Date		2014/08/22	2014/08/23	2014/08/22	2014/08/22	2014/08/22		
COC Number		A159155	A159155	A159155	A159155	A159155		
	UNITS	**C314-7A**	**C314-2A**	**C314-5WB**	**C314-2WA**	**C314-13WB**	**RDL**	**QC Batch**
Polychlorinated Biphenyls								
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Total Aroclors	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	79	80	76	71	79		7628083

RDL = Reportable Detection Limit

Maxxam ID		KN2776		KN2777		
Sampling Date		2014/08/23		2014/08/23		
COC Number		A159155		A159155		
	UNITS	**C314-15B**	**RDL**	**C314-11A**	**RDL**	**QC Batch**
Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1221	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1232	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1242	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1248	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1254	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1260	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1262	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Aroclor 1268	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Total Aroclors	mg/kg	<0.010	0.010	<0.020	0.020	7628083
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	73		71		7628083

RDL = Reportable Detection Limit

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		KN2771		KN2772	KN2773		KN2774		
Sampling Date		2014/08/22		2014/08/23	2014/08/22		2014/08/22		
COC Number		A159155		A159155	A159155		A159155		
	UNITS	**C314-7A**	**QC Batch**	**C314-2A**	**C314-5WB**	**QC Batch**	**C314-2WA**	**RDL**	**QC Batch**
Elements									
Total Arsenic (As)	mg/kg	4.3	7632600	1.8	4.2	7632817	4.8	1.0	7632600
Total Cadmium (Cd)	mg/kg	<0.10	7632600	<0.10	<0.10	7632817	<0.10	0.10	7632600
Total Chromium (Cr)	mg/kg	38	7632600	46	22	7632817	16	1.0	7632600
Total Cobalt (Co)	mg/kg	3.5	7632600	2.8	4.6	7632817	3.0	1.0	7632600
Total Copper (Cu)	mg/kg	6.5	7632600	6.3	7.9	7632817	<5.0	5.0	7632600
Total Lead (Pb)	mg/kg	5.1	7632600	5.0	8.4	7632817	4.9	1.0	7632600
Total Mercury (Hg)	mg/kg	<0.050	7632600	<0.050	<0.050	7632817	<0.050	0.050	7632600
Total Nickel (Ni)	mg/kg	18	7632600	21	13	7632817	6.7	1.0	7632600
Total Zinc (Zn)	mg/kg	20	7632600	13	12	7632817	<10	10	7632600

RDL = Reportable Detection Limit

Maxxam ID		KN2775	KN2776		KN2777		
Sampling Date		2014/08/22	2014/08/23		2014/08/23		
COC Number		A159155	A159155		A159155		
	UNITS	**C314-13WB**	**C314-15B**	**QC Batch**	**C314-11A**	**RDL**	**QC Batch**
Elements							
Total Arsenic (As)	mg/kg	1.9	5.6	7632817	1.4	1.0	7632600
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	7632817	<0.10	0.10	7632600
Total Chromium (Cr)	mg/kg	15	18	7632817	4.8	1.0	7632600
Total Cobalt (Co)	mg/kg	2.3	2.9	7632817	1.2	1.0	7632600
Total Copper (Cu)	mg/kg	<5.0	6.3	7632817	<5.0	5.0	7632600
Total Lead (Pb)	mg/kg	4.4	6.1	7632817	2.5	1.0	7632600
Total Mercury (Hg)	mg/kg	<0.050	<0.050	7632817	<0.050	0.050	7632600
Total Nickel (Ni)	mg/kg	7.8	8.7	7632817	2.6	1.0	7632600
Total Zinc (Zn)	mg/kg	10	<10	7632817	<10	10	7632600

RDL = Reportable Detection Limit

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		KN2778		
Sampling Date		2014/08/23		
COC Number		A159155		
	UNITS	**C314-15W**	**RDL**	**QC Batch**
Polychlorinated Biphenyls				
Aroclor 1016	mg/L	<0.000050	0.000050	7627921
Aroclor 1221	mg/L	<0.000050	0.000050	7627921
Aroclor 1232	mg/L	<0.000050	0.000050	7627921
Aroclor 1242	mg/L	<0.000050	0.000050	7627921
Aroclor 1248	mg/L	<0.000050	0.000050	7627921
Aroclor 1254	mg/L	<0.000050	0.000050	7627921
Aroclor 1260	mg/L	<0.000050	0.000050	7627921
Aroclor 1262	mg/L	<0.000050	0.000050	7627921
Aroclor 1268	mg/L	<0.000050	0.000050	7627921
Total Aroclors	mg/L	<0.000050	0.000050	7627921
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	82		7627921

RDL = Reportable Detection Limit

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		KN2778		
Sampling Date		2014/08/23		
COC Number		A159155		
	UNITS	**C314-15W**	**RDL**	**QC Batch**
Elements				
Total Arsenic (As)	mg/L	0.0053	0.00020	7631124
Total Cadmium (Cd)	mg/L	0.00024	0.000020	7631124
Total Chromium (Cr)	mg/L	0.036	0.0010	7631124
Total Cobalt (Co)	mg/L	0.0030	0.00030	7631124
Total Copper (Cu)	mg/L	0.016	0.00020	7631124
Total Lead (Pb)	mg/L	0.0041	0.00020	7631124
Total Nickel (Ni)	mg/L	0.028	0.00050	7631124
Total Zinc (Zn)	mg/L	0.043	0.0030	7631124
Low Level Elements				
Total Mercury (Hg)	ug/L	<0.020 (1)	0.020	7630982

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

Package 1	6.7°C

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

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL) Comments

Sample KN2771-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.

Sample KN2773-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.

Sample KN2774-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.

Sample KN2775-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.

Sample KN2777-02 Polychlorinated Biphenyls: Detection limits raised due to high moisture content, samples contain => 50% moisture.

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER) Comments

Sample KN2778-01 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.

Results relate only to the items tested.

SILA REMEDIATION
Attention: JEAN-PIERRE PELLETIER
Client Project #: CAM-3/CAM-5 LFM
P.O. #:
Site Location: SHEPHERD BAY/MACKAR INLET

Quality Assurance Report

Maxxam Job Number: EB478367

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7623510	JR1	Matrix Spike	O-TERPHENYL (sur.)	2014/09/07		82	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/07		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2014/09/07		89	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2014/09/07		86	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/07		94	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2014/09/07		91	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2014/09/07		85	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/07	<0.10		mg/L	
			F3 (C16-C34 Hydrocarbons)	2014/09/07	<0.20		mg/L	
		RPD	F2 (C10-C16 Hydrocarbons)	2014/09/07	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2014/09/07	NC		%	40
7627246	PS7	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/09/05		96	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/09/05		99	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/05		101	%	70 - 130
			(C6-C10)	2014/09/05		92	%	70 - 130
		Spiked Blank	1,4-Difluorobenzene (sur.)	2014/09/05		97	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/09/05		97	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/05		96	%	70 - 130
			(C6-C10)	2014/09/05		117	%	70 - 130
		Method Blank	1,4-Difluorobenzene (sur.)	2014/09/05		99	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/09/05		98	%	70 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/05		99	%	70 - 130
			F1 (C6-C10) - BTEX	2014/09/05	<100		ug/L	
			(C6-C10)	2014/09/05	<100		ug/L	
		RPD	F1 (C6-C10) - BTEX	2014/09/05	NC		%	40
			(C6-C10)	2014/09/05	NC		%	40
7627619	NBA	Method Blank	Moisture	2014/09/06	<0.30		%	
		RPD [KN2773-01]	Moisture	2014/09/06	9.0		%	20
7627727	NP2	Matrix Spike						
		[KN2776-01]	1,4-Difluorobenzene (sur.)	2014/09/08		107	%	60 - 140
			4-Bromofluorobenzene (sur.)	2014/09/08		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2014/09/08		105	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/08		95	%	60 - 140
			(C6-C10)	2014/09/08		105	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2014/09/08		99	%	60 - 140
			4-Bromofluorobenzene (sur.)	2014/09/08		101	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2014/09/08		104	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/08		93	%	60 - 140
			(C6-C10)	2014/09/08		109	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2014/09/08		97	%	60 - 140
			4-Bromofluorobenzene (sur.)	2014/09/08		99	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2014/09/08		105	%	60 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/08		93	%	60 - 140
			F1 (C6-C10) - BTEX	2014/09/08	<12		mg/kg	
			(C6-C10)	2014/09/08	<12		mg/kg	
		RPD [KN2776-01]	F1 (C6-C10) - BTEX	2014/09/08	NC		%	50
			(C6-C10)	2014/09/08	NC		%	50
7627782	AK8	Matrix Spike						
		[KN2773-01]	O-TERPHENYL (sur.)	2014/09/09		79	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/09		86	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2014/09/09		90	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2014/09/09		80	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2014/09/09		93	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2014/09/09		96	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2014/09/09		88	%	50 - 130

SILA REMEDIATION
Attention: JEAN-PIERRE PELLETIER
Client Project #: CAM-3/CAM-5 LFM
P.O. #:
Site Location: SHEPHERD BAY/MACKAR INLET

Quality Assurance Report (Continued)

Maxxam Job Number: EB478367

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7627782	AK8	Method Blank	F2 (C10-C16 Hydrocarbons)	2014/09/09	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2014/09/09	<50		mg/kg	
		RPD [KN2773-01]	F2 (C10-C16 Hydrocarbons)	2014/09/09	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2014/09/09	NC		%	50
7627921	LZ3	Matrix Spike	NONACHLOROBIPHENYL (sur.)	2014/09/09		89	%	30 - 130
			Aroclor 1260	2014/09/09		90	%	30 - 130
		Spiked Blank	NONACHLOROBIPHENYL (sur.)	2014/09/08		90	%	30 - 130
			Aroclor 1260	2014/09/08		96	%	30 - 130
		Method Blank	NONACHLOROBIPHENYL (sur.)	2014/09/08		91	%	30 - 130
			Aroclor 1016	2014/09/08	<0.000050		mg/L	
			Aroclor 1221	2014/09/08	<0.000050		mg/L	
			Aroclor 1232	2014/09/08	<0.000050		mg/L	
			Aroclor 1242	2014/09/08	<0.000050		mg/L	
			Aroclor 1248	2014/09/08	<0.000050		mg/L	
			Aroclor 1254	2014/09/08	<0.000050		mg/L	
			Aroclor 1260	2014/09/08	<0.000050		mg/L	
			Aroclor 1262	2014/09/08	<0.000050		mg/L	
			Aroclor 1268	2014/09/08	<0.000050		mg/L	
			Total Aroclors	2014/09/08	<0.000050		mg/L	
		RPD	Aroclor 1016	2014/09/09	NC		%	40
			Aroclor 1221	2014/09/09	NC		%	40
			Aroclor 1232	2014/09/09	NC		%	40
			Aroclor 1242	2014/09/09	NC		%	40
			Aroclor 1248	2014/09/09	NC		%	40
			Aroclor 1254	2014/09/09	NC		%	40
			Aroclor 1260	2014/09/09	NC		%	40
			Aroclor 1262	2014/09/09	NC		%	40
			Aroclor 1268	2014/09/09	NC		%	40
			Total Aroclors	2014/09/09	NC		%	40
7628083	LZ3	Matrix Spike [KN2776-02]	NONACHLOROBIPHENYL (sur.)	2014/09/08		78	%	30 - 130
			Aroclor 1260	2014/09/08		72	%	30 - 130
		Spiked Blank	NONACHLOROBIPHENYL (sur.)	2014/09/08		82	%	30 - 130
			Aroclor 1260	2014/09/08		89	%	30 - 130
		Method Blank	NONACHLOROBIPHENYL (sur.)	2014/09/08		81	%	30 - 130
			Aroclor 1016	2014/09/08	<0.010		mg/kg	
			Aroclor 1221	2014/09/08	<0.010		mg/kg	
			Aroclor 1232	2014/09/08	<0.010		mg/kg	
			Aroclor 1242	2014/09/08	<0.010		mg/kg	
			Aroclor 1248	2014/09/08	<0.010		mg/kg	
			Aroclor 1254	2014/09/08	<0.010		mg/kg	
			Aroclor 1260	2014/09/08	<0.010		mg/kg	
			Aroclor 1262	2014/09/08	<0.010		mg/kg	
			Aroclor 1268	2014/09/08	<0.010		mg/kg	
			Total Aroclors	2014/09/08	<0.010		mg/kg	
		RPD [KN2776-02]	Aroclor 1016	2014/09/08	NC		%	50
			Aroclor 1221	2014/09/08	NC		%	50
			Aroclor 1232	2014/09/08	NC		%	50
			Aroclor 1242	2014/09/08	NC		%	50
			Aroclor 1248	2014/09/08	NC		%	50
			Aroclor 1254	2014/09/08	NC		%	50
			Aroclor 1260	2014/09/08	NC		%	50
			Aroclor 1262	2014/09/08	NC		%	50
			Aroclor 1268	2014/09/08	NC		%	50
			Total Aroclors	2014/09/08	NC		%	50

SILA REMEDIATION
Attention: JEAN-PIERRE PELLETIER
Client Project #: CAM-3/CAM-5 LFM
P.O. #:
Site Location: SHEPHERD BAY/MACKAR INLET

Quality Assurance Report (Continued)

Maxxam Job Number: EB478367

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7630982	RK3	Matrix Spike	Total Mercury (Hg)	2014/09/09		94	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2014/09/10		101	%	80 - 120
		Method Blank	Total Mercury (Hg)	2014/09/09	<0.0020		ug/L	
		RPD	Total Mercury (Hg)	2014/09/09	NC		%	20
7631124	SF3	Matrix Spike	Total Arsenic (As)	2014/09/09		108	%	80 - 120
			Total Cadmium (Cd)	2014/09/09		110	%	80 - 120
			Total Chromium (Cr)	2014/09/09		107	%	80 - 120
			Total Cobalt (Co)	2014/09/09		107	%	80 - 120
			Total Copper (Cu)	2014/09/09		107	%	80 - 120
			Total Lead (Pb)	2014/09/09		111	%	80 - 120
			Total Nickel (Ni)	2014/09/09		107	%	80 - 120
			Total Zinc (Zn)	2014/09/09		111	%	80 - 120
		Spiked Blank	Total Arsenic (As)	2014/09/09		105	%	80 - 120
			Total Cadmium (Cd)	2014/09/09		103	%	80 - 120
			Total Chromium (Cr)	2014/09/09		104	%	80 - 120
			Total Cobalt (Co)	2014/09/09		106	%	80 - 120
			Total Copper (Cu)	2014/09/09		107	%	80 - 120
			Total Lead (Pb)	2014/09/09		109	%	80 - 120
			Total Nickel (Ni)	2014/09/09		106	%	80 - 120
			Total Zinc (Zn)	2014/09/09		110	%	80 - 120
		Method Blank	Total Arsenic (As)	2014/09/09	<0.00020		mg/L	
			Total Cadmium (Cd)	2014/09/09	<0.000020		mg/L	
			Total Chromium (Cr)	2014/09/09	<0.0010		mg/L	
			Total Cobalt (Co)	2014/09/09	<0.00030		mg/L	
			Total Copper (Cu)	2014/09/09	0.00027, RDL=0.00020		mg/L	
			Total Lead (Pb)	2014/09/09	<0.00020		mg/L	
			Total Nickel (Ni)	2014/09/09	<0.00050		mg/L	
			Total Zinc (Zn)	2014/09/09	0.0059, RDL=0.0030		mg/L	
		RPD	Total Copper (Cu)	2014/09/09	2.5		%	20
7632600	NC3	Matrix Spike	Total Arsenic (As)	2014/09/10		94	%	75 - 125
			Total Cadmium (Cd)	2014/09/10		96	%	75 - 125
			Total Chromium (Cr)	2014/09/10		98	%	75 - 125
			Total Cobalt (Co)	2014/09/10		90	%	75 - 125
			Total Copper (Cu)	2014/09/10		89	%	75 - 125
			Total Lead (Pb)	2014/09/10		84	%	75 - 125
			Total Mercury (Hg)	2014/09/10		87	%	75 - 125
			Total Nickel (Ni)	2014/09/10		NC	%	75 - 125
			Total Zinc (Zn)	2014/09/10		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2014/09/10		118	%	50 - 150
			Total Chromium (Cr)	2014/09/10		93	%	41 - 159
			Total Cobalt (Co)	2014/09/10		96	%	75 - 125
			Total Copper (Cu)	2014/09/10		97	%	73 - 127
			Total Lead (Pb)	2014/09/10		96	%	54 - 146
			Total Nickel (Ni)	2014/09/10		104	%	61 - 139
			Total Zinc (Zn)	2014/09/10		106	%	72 - 128
		Spiked Blank	Total Arsenic (As)	2014/09/10		94	%	75 - 125
			Total Cadmium (Cd)	2014/09/10		94	%	75 - 125
			Total Chromium (Cr)	2014/09/10		91	%	75 - 125
			Total Cobalt (Co)	2014/09/10		89	%	75 - 125
			Total Copper (Cu)	2014/09/10		89	%	75 - 125
			Total Lead (Pb)	2014/09/10		85	%	75 - 125
			Total Mercury (Hg)	2014/09/10		88	%	75 - 125
			Total Nickel (Ni)	2014/09/10		90	%	75 - 125
			Total Zinc (Zn)	2014/09/10		94	%	75 - 125
		Method Blank	Total Arsenic (As)	2014/09/10	<1.0		mg/kg	

SILA REMEDIATION
Attention: JEAN-PIERRE PELLETIER
Client Project #: CAM-3/CAM-5 LFM
P.O. #:
Site Location: SHEPHERD BAY/MACKAR INLET

Quality Assurance Report (Continued)

Maxxam Job Number: EB478367

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7632600 NC3	Method Blank	Total Cadmium (Cd)	2014/09/10	<0.10		mg/kg	
		Total Chromium (Cr)	2014/09/10	<1.0		mg/kg	
		Total Cobalt (Co)	2014/09/10	<1.0		mg/kg	
		Total Copper (Cu)	2014/09/10	<5.0		mg/kg	
		Total Lead (Pb)	2014/09/10	<1.0		mg/kg	
		Total Mercury (Hg)	2014/09/10	<0.050		mg/kg	
		Total Nickel (Ni)	2014/09/10	<1.0		mg/kg	
		Total Zinc (Zn)	2014/09/10	<10		mg/kg	
	RPD	Total Arsenic (As)	2014/09/10	7.4		%	35
		Total Cadmium (Cd)	2014/09/10	NC		%	35
		Total Chromium (Cr)	2014/09/10	6.4		%	35
		Total Cobalt (Co)	2014/09/10	1.8		%	35
		Total Copper (Cu)	2014/09/10	NC		%	35
		Total Lead (Pb)	2014/09/10	0.006		%	35
		Total Mercury (Hg)	2014/09/10	NC		%	35
		Total Nickel (Ni)	2014/09/10	3.5		%	35
		Total Zinc (Zn)	2014/09/10	2.4		%	35
7632817 JEP	Matrix Spike	Total Arsenic (As)	2014/09/10		95	%	75 - 125
		Total Cadmium (Cd)	2014/09/10		96	%	75 - 125
		Total Chromium (Cr)	2014/09/10		90	%	75 - 125
		Total Cobalt (Co)	2014/09/10		93	%	75 - 125
		Total Copper (Cu)	2014/09/10		93	%	75 - 125
		Total Lead (Pb)	2014/09/10		98	%	75 - 125
		Total Mercury (Hg)	2014/09/10		100	%	75 - 125
		Total Nickel (Ni)	2014/09/10		NC	%	75 - 125
		Total Zinc (Zn)	2014/09/10		NC	%	75 - 125
	QC Standard	Total Arsenic (As)	2014/09/10		114	%	50 - 150
		Total Chromium (Cr)	2014/09/10		92	%	41 - 159
		Total Cobalt (Co)	2014/09/10		100	%	75 - 125
		Total Copper (Cu)	2014/09/10		104	%	73 - 127
		Total Lead (Pb)	2014/09/10		104	%	54 - 146
		Total Nickel (Ni)	2014/09/10		108	%	61 - 139
		Total Zinc (Zn)	2014/09/10		109	%	72 - 128
	Spiked Blank	Total Arsenic (As)	2014/09/10		88	%	75 - 125
		Total Cadmium (Cd)	2014/09/10		87	%	75 - 125
		Total Chromium (Cr)	2014/09/10		85	%	75 - 125
		Total Cobalt (Co)	2014/09/10		87	%	75 - 125
		Total Copper (Cu)	2014/09/10		88	%	75 - 125
		Total Lead (Pb)	2014/09/10		90	%	75 - 125
		Total Mercury (Hg)	2014/09/10		96	%	75 - 125
		Total Nickel (Ni)	2014/09/10		87	%	75 - 125
		Total Zinc (Zn)	2014/09/10		89	%	75 - 125
	Method Blank	Total Arsenic (As)	2014/09/10	<1.0		mg/kg	
		Total Cadmium (Cd)	2014/09/10	<0.10		mg/kg	
		Total Chromium (Cr)	2014/09/10	<1.0		mg/kg	
		Total Cobalt (Co)	2014/09/10	<1.0		mg/kg	
		Total Copper (Cu)	2014/09/10	<5.0		mg/kg	
		Total Lead (Pb)	2014/09/10	<1.0		mg/kg	
		Total Mercury (Hg)	2014/09/10	<0.050		mg/kg	
		Total Nickel (Ni)	2014/09/10	<1.0		mg/kg	
		Total Zinc (Zn)	2014/09/10	<10		mg/kg	
	RPD	Total Arsenic (As)	2014/09/10	13.3		%	35
		Total Cadmium (Cd)	2014/09/10	NC		%	35
		Total Chromium (Cr)	2014/09/10	3.4		%	35
		Total Cobalt (Co)	2014/09/10	7.4		%	35

SILA REMEDIATION
Attention: JEAN-PIERRE PELLETIER
Client Project #: CAM-3/CAM-5 LFM
P.O. #:
Site Location: SHEPHERD BAY/MACKAR INLET

Quality Assurance Report (Continued)

Maxxam Job Number: EB478367

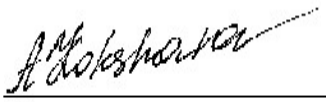
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7632817	JEP	RPD	Total Copper (Cu)	2014/09/10	NC		%	35
			Total Lead (Pb)	2014/09/10	12.6		%	35
			Total Mercury (Hg)	2014/09/10	NC		%	35
			Total Nickel (Ni)	2014/09/10	9.1		%	35
			Total Zinc (Zn)	2014/09/10	15.1		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
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).

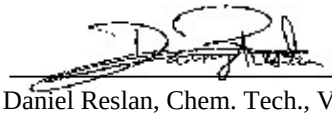
Validation Signature Page

Maxxam Job #: B478367

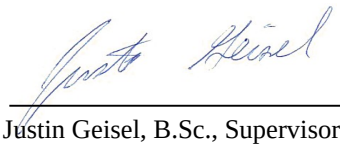
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



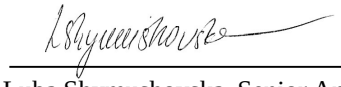
Anna Koksharova, M.Sc., Senior Analyst



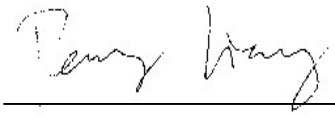
Daniel Reslan, Chem. Tech., Volatiles Supervisor



Justin Geisel, B.Sc., Supervisor, Organics



Luba Shymushovska, Senior Analyst, Organic Department

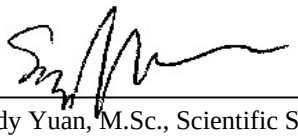


Peng Liang, Analyst II

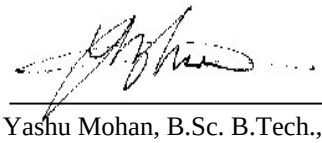
Validation Signature Page

Maxxam Job #: B478367

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



Sandy Yuan, M.Sc., Scientific Specialist



Yashu Mohan, B.Sc. B.Tech., Senior Analyst

==========

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.

Your Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Your C.O.C. #: A159155

Attention:JEAN-PIERRE PELLETIER

SILA REMEDIATION
4495 BL. WILFRID- HAMEL, BUR 1
QUEBEC, PQ
CANADA G1P 2T7

Report Date: 2014/09/22
Report #: R1646807
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B478367
Received: 2014/09/04, 10:45

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	8	2014/09/05	2014/09/08	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons (F2-F4 in soil)	8	2014/09/05	2014/09/09	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS
Elements by ICPMS - Soils	8	2014/09/10	2014/09/10	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Moisture	8	N/A	2014/09/06	AB SOP-00002	CCME PHC-CWS
Polychlorinated Biphenyls (1)	8	2014/09/06	2014/09/08	CAL SOP-00149	EPA 8082A R1 m

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	2	N/A	2014/09/05	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons (F2-F4 in water)	2	2014/09/06	2014/09/07	AB SOP-00037 / AB SOP-00040	CCME PHC-CWS m
Mercury - Low Level (Total) (1)	2	2014/09/09	2014/09/09	CAL SOP-00007	EPA 1631 RE 20460 m
Elements by ICPMS - Total	1	2014/09/09	2014/09/09	AB SOP-00014 / AB SOP-00043	EPA 200.8 R5.4 m
Elements by ICPMS - Total	1	2014/09/09	2014/09/10	AB SOP-00014 / AB SOP-00043	EPA 200.8 R5.4 m
Polychlorinated Biphenyls (1)	2	2014/09/06	2014/09/09	CAL SOP-00149	EPA 8082A R1 m

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

(1) This test was performed by Maxxam Calgary Environmental

Your Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Your C.O.C. #: A159155

Attention:JEAN-PIERRE PELLETIER

SILA REMEDIATION
4495 BL. WILFRID- HAMEL, BUR 1
QUEBEC, PQ
CANADA G1P 2T7

Report Date: 2014/09/22
Report #: R1646807
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B478367
Received: 2014/09/04, 10:45

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tanya Eugine, M.Sc., Project Manager
Email: TEugine@maxxam.ca
Phone# (780)577-7144

==========

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 Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		KN2769	KN2771	KN2772	KN2773	KN2774	KN2775	KN2776		
Sampling Date		2014/08/21	2014/08/22	2014/08/23	2014/08/22	2014/08/22	2014/08/22	2014/08/23		
COC Number		A159155	A159155	A159155	A159155	A159155	A159155	A159155		
	Units	C514-7WB	C314-7A	C314-2A	C314-5WB	C314-2WA	C314-13WB	C314-15B	RDL	QC Batch
Physical Properties										
Moisture	%	2.0	46	4.5	15	13	9.7	15	0.30	7627619
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	<10	<10	10	7627782
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	170	<50	<50	<50	<50	<50	50	7627782
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	Yes	Yes		7627782
Volatiles										
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	7627727
(C6-C10)	mg/kg	<12	<12	<12	<12	<12	<12	<12	12	7627727
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	98	123	102	105	105	104	104		7627727
4-Bromofluorobenzene (sur.)	%	98	99	100	99	100	100	99		7627727
D10-ETHYLBENZENE (sur.)	%	100	105	108	107	105	107	103		7627727
D4-1,2-Dichloroethane (sur.)	%	93	93	90	92	96	92	93		7627727
O-TERPHENYL (sur.)	%	82	95	86	91	99	93	84		7627782

RDL = Reportable Detection Limit

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		KN2777		
Sampling Date		2014/08/23		
COC Number		A159155		
	Units	C314-11A	RDL	QC Batch
Physical Properties				
Moisture	%	55	0.30	7627619
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<22 (1)	22	7627782
F3 (C16-C34 Hydrocarbons)	mg/kg	160 (1)	110	7627782
Reached Baseline at C50	mg/kg	Yes		7627782
Volatiles				
F1 (C6-C10) - BTEX	mg/kg	<27 (1)	27	7627727
(C6-C10)	mg/kg	<27 (1)	27	7627727
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	127		7627727
4-Bromofluorobenzene (sur.)	%	98		7627727
D10-ETHYLBENZENE (sur.)	%	101		7627727
D4-1,2-Dichloroethane (sur.)	%	93		7627727
O-TERPHENYL (sur.)	%	102		7627782

RDL = Reportable Detection Limit
(1) Detection limits raised due to high moisture content.

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

AT1 BTEX AND F1-F4 IN WATER (WATER)

Maxxam ID		KN2770	KN2778		
Sampling Date		2014/08/21	2014/08/23		
COC Number		A159155	A159155		
	Units	C514-8W	C314-15W	RDL	QC Batch
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.71 (1)	<0.71 (1)	0.71	7623510
F3 (C16-C34 Hydrocarbons)	mg/L	<1.4 (1)	<1.4 (1)	1.4	7623510
Reached Baseline at C50	mg/L	Yes	Yes		7623510
Volatiles					
F1 (C6-C10) - BTEX	ug/L	<100	<100	100	7627246
(C6-C10)	ug/L	<100	<100	100	7627246
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	101	100		7627246
4-Bromofluorobenzene (sur.)	%	98	98		7627246
D4-1,2-Dichloroethane (sur.)	%	96	99		7627246
O-TERPHENYL (sur.)	%	85	83		7623510

RDL = Reportable Detection Limit
(1) Detection limit raised based on sample volume used for analysis.

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		KN2769	KN2771	KN2772	KN2773	KN2774	KN2775	KN2776		
Sampling Date		2014/08/21	2014/08/22	2014/08/23	2014/08/22	2014/08/22	2014/08/22	2014/08/23		
COC Number		A159155	A159155	A159155	A159155	A159155	A159155	A159155		
	Units	C514-7WB	C314-7A	C314-2A	C314-5WB	C314-2WA	C314-13WB	C314-15B	RDL	QC Batch
Polychlorinated Biphenyls										
Aroclor 1016	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1221	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1232	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1242	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1248	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1254	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1260	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1262	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Aroclor 1268	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Total Aroclors	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7628083
Surrogate Recovery (%)										
NONACHLOROBIPHENYL (sur.)	%	79	79	80	76	71	79	73		7628083
RDL = Reportable Detection Limit										

Maxxam ID		KN2777		
Sampling Date		2014/08/23		
COC Number		A159155		
	Units	C314-11A	RDL	QC Batch
Polychlorinated Biphenyls				
Aroclor 1016	mg/kg	<0.020	0.020	7628083
Aroclor 1221	mg/kg	<0.020	0.020	7628083
Aroclor 1232	mg/kg	<0.020	0.020	7628083
Aroclor 1242	mg/kg	<0.020	0.020	7628083
Aroclor 1248	mg/kg	<0.020	0.020	7628083
Aroclor 1254	mg/kg	<0.020	0.020	7628083
Aroclor 1260	mg/kg	<0.020	0.020	7628083
Aroclor 1262	mg/kg	<0.020	0.020	7628083
Aroclor 1268	mg/kg	<0.020	0.020	7628083
Total Aroclors	mg/kg	<0.020	0.020	7628083
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	71		7628083
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		KN2769		KN2771		KN2772	KN2773		KN2774		
Sampling Date		2014/08/21		2014/08/22		2014/08/23	2014/08/22		2014/08/22		
COC Number		A159155		A159155		A159155	A159155		A159155		
	Units	C514-7WB	QC Batch	C314-7A	QC Batch	C314-2A	C314-5WB	QC Batch	C314-2WA	RDL	QC Batch
Elements											
Total Arsenic (As)	mg/kg	<1.0	7632817	4.3	7632600	1.8	4.2	7632817	4.8	1.0	7632600
Total Cadmium (Cd)	mg/kg	<0.10	7632817	<0.10	7632600	<0.10	<0.10	7632817	<0.10	0.10	7632600
Total Chromium (Cr)	mg/kg	85	7632817	38	7632600	46	22	7632817	16	1.0	7632600
Total Cobalt (Co)	mg/kg	3.5	7632817	3.5	7632600	2.8	4.6	7632817	3.0	1.0	7632600
Total Copper (Cu)	mg/kg	7.9	7632817	6.5	7632600	6.3	7.9	7632817	<5.0	5.0	7632600
Total Lead (Pb)	mg/kg	2.5	7632817	5.1	7632600	5.0	8.4	7632817	4.9	1.0	7632600
Total Mercury (Hg)	mg/kg	<0.050	7632817	<0.050	7632600	<0.050	<0.050	7632817	<0.050	0.050	7632600
Total Nickel (Ni)	mg/kg	40	7632817	18	7632600	21	13	7632817	6.7	1.0	7632600
Total Zinc (Zn)	mg/kg	17	7632817	20	7632600	13	12	7632817	<10	10	7632600
RDL = Reportable Detection Limit											

Maxxam ID		KN2775	KN2776		KN2777		
Sampling Date		2014/08/22	2014/08/23		2014/08/23		
COC Number		A159155	A159155		A159155		
	Units	C314-13WB	C314-15B	QC Batch	C314-11A	RDL	QC Batch
Elements							
Total Arsenic (As)	mg/kg	1.9	5.6	7632817	1.4	1.0	7632600
Total Cadmium (Cd)	mg/kg	<0.10	<0.10	7632817	<0.10	0.10	7632600
Total Chromium (Cr)	mg/kg	15	18	7632817	4.8	1.0	7632600
Total Cobalt (Co)	mg/kg	2.3	2.9	7632817	1.2	1.0	7632600
Total Copper (Cu)	mg/kg	<5.0	6.3	7632817	<5.0	5.0	7632600
Total Lead (Pb)	mg/kg	4.4	6.1	7632817	2.5	1.0	7632600
Total Mercury (Hg)	mg/kg	<0.050	<0.050	7632817	<0.050	0.050	7632600
Total Nickel (Ni)	mg/kg	7.8	8.7	7632817	2.6	1.0	7632600
Total Zinc (Zn)	mg/kg	10	<10	7632817	<10	10	7632600
RDL = Reportable Detection Limit							

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		KN2770	KN2778		
Sampling Date		2014/08/21	2014/08/23		
COC Number		A159155	A159155		
	Units	C514-8W	C314-15W	RDL	QC Batch
Polychlorinated Biphenyls					
Aroclor 1016	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1221	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1232	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1242	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1248	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1254	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1260	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1262	mg/L	<0.000050	<0.000050	0.000050	7627921
Aroclor 1268	mg/L	<0.000050	<0.000050	0.000050	7627921
Total Aroclors	mg/L	<0.000050	<0.000050	0.000050	7627921
Surrogate Recovery (%)					
NONACHLOROBIPHENYL (sur.)	%	76	82		7627921
RDL = Reportable Detection Limit					

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		KN2770	KN2778		
Sampling Date		2014/08/21	2014/08/23		
COC Number		A159155	A159155		
	Units	C514-8W	C314-15W	RDL	QC Batch
Elements					
Total Arsenic (As)	mg/L	0.0032	0.0053	0.00020	7631124
Total Cadmium (Cd)	mg/L	0.000085	0.00024	0.000020	7631124
Total Chromium (Cr)	mg/L	0.059	0.036	0.0010	7631124
Total Cobalt (Co)	mg/L	0.014	0.0030	0.00030	7631124
Total Copper (Cu)	mg/L	0.080	0.016	0.00020	7631124
Total Lead (Pb)	mg/L	0.015	0.0041	0.00020	7631124
Total Nickel (Ni)	mg/L	0.042	0.028	0.00050	7631124
Total Zinc (Zn)	mg/L	0.080	0.043	0.0030	7631124
Low Level Elements					
Total Mercury (Hg)	ug/L	<0.020 (1)	<0.020 (1)	0.020	7630982

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

GENERAL COMMENTS

Sample KN2769-01 : Sample extracted for F24 past method-specified hold time.

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL) Comments

Sample KN2769-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.
Sample KN2771-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.
Sample KN2773-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.
Sample KN2774-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.
Sample KN2775-02 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.
Sample KN2777-02 Polychlorinated Biphenyls: Detection limits raised due to high moisture content, samples contain => 50% moisture.

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER) Comments

Sample KN2770-01 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.
Sample KN2778-01 Polychlorinated Biphenyls: Sample extracted past method-specified hold time.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

QUALITY ASSURANCE REPORT

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7623510	O-TERPHENYL (sur.)	2014/09/07	82	50 - 130	86	50 - 130	85	%				
7627246	1,4-Difluorobenzene (sur.)	2014/09/05	96	70 - 130	97	70 - 130	99	%				
7627246	4-Bromofluorobenzene (sur.)	2014/09/05	99	70 - 130	97	70 - 130	98	%				
7627246	D4-1,2-Dichloroethane (sur.)	2014/09/05	101	70 - 130	96	70 - 130	99	%				
7627727	1,4-Difluorobenzene (sur.)	2014/09/08	107	60 - 140	99	60 - 140	97	%				
7627727	4-Bromofluorobenzene (sur.)	2014/09/08	102	60 - 140	101	60 - 140	99	%				
7627727	D10-ETHYLBENZENE (sur.)	2014/09/08	105	60 - 130	104	60 - 130	105	%				
7627727	D4-1,2-Dichloroethane (sur.)	2014/09/08	95	60 - 140	93	60 - 140	93	%				
7627782	O-TERPHENYL (sur.)	2014/09/09	79	50 - 130	80	50 - 130	88	%				
7627921	NONACHLOROBIPHENYL (sur.)	2014/09/08	89	30 - 130	90	30 - 130	91	%				
7628083	NONACHLOROBIPHENYL (sur.)	2014/09/08	78	30 - 130	82	30 - 130	81	%				
7623510	F2 (C10-C16 Hydrocarbons)	2014/09/07	NC	50 - 130	94	70 - 130	<0.10	mg/L	NC	40		
7623510	F3 (C16-C34 Hydrocarbons)	2014/09/07	89	50 - 130	91	70 - 130	<0.20	mg/L	NC	40		
7627246	(C6-C10)	2014/09/05	92	70 - 130	117	70 - 130	<100	ug/L	NC	40		
7627246	F1 (C6-C10) - BTEX	2014/09/05					<100	ug/L	NC	40		
7627619	Moisture	2014/09/06					<0.30	%	9.0	20		
7627727	(C6-C10)	2014/09/08	105	60 - 140	109	60 - 140	<12	mg/kg	NC	50		
7627727	F1 (C6-C10) - BTEX	2014/09/08					<12	mg/kg	NC	50		
7627782	F2 (C10-C16 Hydrocarbons)	2014/09/09	86	50 - 130	93	70 - 130	<10	mg/kg	NC	50		
7627782	F3 (C16-C34 Hydrocarbons)	2014/09/09	90	50 - 130	96	70 - 130	<50	mg/kg	NC	50		
7627921	Aroclor 1016	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1221	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1232	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1242	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1248	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1254	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1260	2014/09/09	90	30 - 130	96	30 - 130	<0.000050	mg/L	NC	40		
7627921	Aroclor 1262	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Aroclor 1268	2014/09/09					<0.000050	mg/L	NC	40		
7627921	Total Aroclors	2014/09/09					<0.000050	mg/L	NC	40		
7628083	Aroclor 1016	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Aroclor 1221	2014/09/08					<0.010	mg/kg	NC	50		

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

QUALITY ASSURANCE REPORT(CONT'D)

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7628083	Aroclor 1232	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Aroclor 1242	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Aroclor 1248	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Aroclor 1254	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Aroclor 1260	2014/09/08	72	30 - 130	89	30 - 130	<0.010	mg/kg	NC	50		
7628083	Aroclor 1262	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Aroclor 1268	2014/09/08					<0.010	mg/kg	NC	50		
7628083	Total Aroclors	2014/09/08					<0.010	mg/kg	NC	50		
7630982	Total Mercury (Hg)	2014/09/09	94	80 - 120	101	80 - 120	<0.0020	ug/L	NC	20		
7631124	Total Arsenic (As)	2014/09/09	108	80 - 120	105	80 - 120	<0.00020	mg/L				
7631124	Total Cadmium (Cd)	2014/09/09	110	80 - 120	103	80 - 120	<0.000020	mg/L				
7631124	Total Chromium (Cr)	2014/09/09	107	80 - 120	104	80 - 120	<0.0010	mg/L				
7631124	Total Cobalt (Co)	2014/09/09	107	80 - 120	106	80 - 120	<0.00030	mg/L				
7631124	Total Copper (Cu)	2014/09/09	107	80 - 120	107	80 - 120	0.00027 ,RDL=0.00020	mg/L	2.5	20		
7631124	Total Lead (Pb)	2014/09/09	111	80 - 120	109	80 - 120	<0.00020	mg/L				
7631124	Total Nickel (Ni)	2014/09/09	107	80 - 120	106	80 - 120	<0.00050	mg/L				
7631124	Total Zinc (Zn)	2014/09/09	111	80 - 120	110	80 - 120	0.0059 ,RDL=0.0030	mg/L				
7632600	Total Arsenic (As)	2014/09/10	94	75 - 125	94	75 - 125	<1.0	mg/kg	7.4	35	118	50 - 150
7632600	Total Cadmium (Cd)	2014/09/10	96	75 - 125	94	75 - 125	<0.10	mg/kg	NC	35		
7632600	Total Chromium (Cr)	2014/09/10	98	75 - 125	91	75 - 125	<1.0	mg/kg	6.4	35	93	41 - 159
7632600	Total Cobalt (Co)	2014/09/10	90	75 - 125	89	75 - 125	<1.0	mg/kg	1.8	35	96	75 - 125
7632600	Total Copper (Cu)	2014/09/10	89	75 - 125	89	75 - 125	<5.0	mg/kg	NC	35	97	73 - 127
7632600	Total Lead (Pb)	2014/09/10	84	75 - 125	85	75 - 125	<1.0	mg/kg	0.0063	35	96	54 - 146
7632600	Total Mercury (Hg)	2014/09/10	87	75 - 125	88	75 - 125	<0.050	mg/kg	NC	35		
7632600	Total Nickel (Ni)	2014/09/10	NC	75 - 125	90	75 - 125	<1.0	mg/kg	3.5	35	104	61 - 139
7632600	Total Zinc (Zn)	2014/09/10	NC	75 - 125	94	75 - 125	<10	mg/kg	2.4	35	106	72 - 128
7632817	Total Arsenic (As)	2014/09/10	95	75 - 125	88	75 - 125	<1.0	mg/kg	13	35	114	50 - 150
7632817	Total Cadmium (Cd)	2014/09/10	96	75 - 125	87	75 - 125	<0.10	mg/kg	NC	35		
7632817	Total Chromium (Cr)	2014/09/10	90	75 - 125	85	75 - 125	<1.0	mg/kg	3.4	35	92	41 - 159
7632817	Total Cobalt (Co)	2014/09/10	93	75 - 125	87	75 - 125	<1.0	mg/kg	7.4	35	100	75 - 125

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

QUALITY ASSURANCE REPORT(CONT'D)

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7632817	Total Copper (Cu)	2014/09/10	93	75 - 125	88	75 - 125	<5.0	mg/kg	NC	35	104	73 - 127
7632817	Total Lead (Pb)	2014/09/10	98	75 - 125	90	75 - 125	<1.0	mg/kg	13	35	104	54 - 146
7632817	Total Mercury (Hg)	2014/09/10	100	75 - 125	96	75 - 125	<0.050	mg/kg	NC	35		
7632817	Total Nickel (Ni)	2014/09/10	NC	75 - 125	87	75 - 125	<1.0	mg/kg	9.1	35	108	61 - 139
7632817	Total Zinc (Zn)	2014/09/10	NC	75 - 125	89	75 - 125	<10	mg/kg	15	35	109	72 - 128

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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).

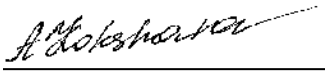
Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam Job #: B478367
Report Date: 2014/09/22

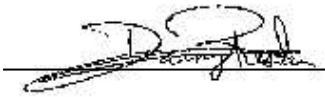
SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

VALIDATION SIGNATURE PAGE

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



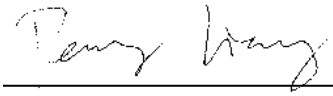
Anna Koksharova, M.Sc., Senior Analyst



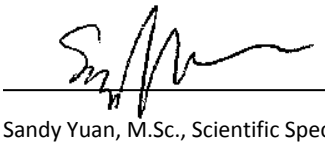
Daniel Reslan, Chem. Tech., Volatiles Supervisor

Justin Geisel, B.Sc., Supervisor, Organics

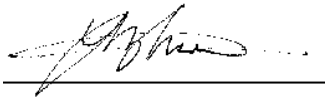
Luba Shymushovska, Senior Analyst, Organic Department



Peng Liang, Analyst II



Sandy Yuan, M.Sc., Scientific Specialist



Yashu Mohan, B.Sc. B.Tech., Senior Analyst

Maxxam Job #: B478367
Report Date: 2014/09/22

SILA REMEDIATION
Client Project #: CAM-3/CAM-5 LFM
Site Location: SHEPHERD BAY/MACKAR INLET
Sampler Initials: AP

VALIDATION SIGNATURE PAGE(CONT'D)

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

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 Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

ANNEX 2

QA/QC DISCUSSION

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
  7217 Roper Road NW
  Edmonton, Alberta
  T6B 3J4, Canada
  CALA Registration number: 2602

- **Quality Assurance Laboratory**
  Maxxam Analytics International Corporation
  o/a Maxxam Analytics Edmonton
  9331 - 48th Street T6B 2R4
  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°C during transportation.
- Samples were kept at the laboratory at temperatures below 4°C.

A sample integrity report from Exova is provided in Annex 1. This report 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: Seven blind duplicate soil samples (C314-BD1 through C314-BD7) and one blind duplicate groundwater sample (C314-BDW1) were submitted, as an independent check on data reproducibility, and to assess the field QA/QC protocols, along with one trip blank (C314-FB) and one field blank water sample (C1/314-TB).
- 10% Inter-laboratory Duplicate Samples were sent to Maxxam: Seven blind duplicate soil samples (C314-2A, 7A, 2WA, 5WB, 13WB, 15B, 11A) and one blind duplicate groundwater sample (C314-15W) 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

Depending upon the method, Exova QC samples are set at 1 per XX samples for MS/MSD/DUPs (usually 1 per 20 for most Exova's Calgary methods) and 1 per batch for method blanks and calibration checks. For the client samples, multiple QCs associated with the samples/batches are analyzed and all QCs are evaluated. However only one 1 set of QCs will appear on the client report.

For the CAM-3 samples, Exova performed 5 batches associated with BTEX-CCME-Soil (each containing ~12 samples each). Four out of the 5 batches contained an MS/MSD. The other 1 batch contained a client duplicate. All 5 batches contain the calibration check and method blank.

The total metals analysis on the soil matrix was analyzed in two different batches as the 71 samples do not fit into a single batch size. In this specific analysis, a batch is set to insert a QA/QC sample every 25 samples and duplicate every 15 samples. In each

batch, Exova has two sets of QA/QC samples and duplicates. Exova's LIMS system is designed to report only one set of QC result (the smallest QC ID number) when there are multiple QC results appear in the batch. Exova's QA/QC results are presented in Annex 2.

As only 7 soil samples and 1 groundwater sample were sent to Maxxam, they only performed on single batch / control for soil and water, for all parameters. Maxxam's QA/QC results are presented with the certificates of analysis in Annex 1.

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	0,2	1,0	mg/L	0,0002	0,0010
	Maxxam	mg/kg	1,0	5,0	mg/L	0,0002	0,0010
CD	Exova	mg/kg	0,01	0,05	mg/L	0,0001	0,0005
	Maxxam	mg/kg	0,10	0,50	mg/L	0,0002	0,0010
Cr	Exova	mg/kg	0,5	2,5	mg/L	0,0005	0,0025
	Maxxam	mg/kg	1,0	5,0	mg/L	0,0010	0,0050
Co	Exova	mg/kg	0,1	0,5	mg/L	0,0001	0,0005
	Maxxam	mg/kg	1,0	5,0	mg/L	0,0003	0,0015
Cu	Exova	mg/kg	1,0	5,0	mg/L	0,0010	0,0050
	Maxxam	mg/kg	5,0	25,0	mg/L	0,0002	0,0010
Pb	Exova	mg/kg	5,0	25,0	mg/L	0,0001	0,0005
	Maxxam	mg/kg	1,0	5,0	mg/L	0,0002	0,0010
Ni	Exova	mg/kg	0,5	2,5	mg/L	0,0005	0,0025
	Maxxam	mg/kg	1,0	5,0	mg/L	0,0005	0,0025
Zn	Exova	mg/kg	1	5	mg/L	0,001	0,005
	Maxxam	mg/kg	10	50	mg/L	0,003	0,015
Hg	Exova	mg/kg	0,01	0,05	mg/L	0,00005	0,00025
	Maxxam	mg/kg	0,05	0,25	mg/L	0,00010	0,00050
Total PCBs	Exova	mg/kg	0,10	0,50	ug/L	0,10	0,50
	Maxxam	mg/kg	0,01	0,05	ug/L	0,05	0,25
PHC F1	Exova	mg/kg	10	50	mg/L	0,2	1,0
	Maxxam	mg/kg	12	60	mg/L	0,1	0,5
PHC F2	Exova	mg/kg	50	250	mg/L	0,1	0,5
	Maxxam	mg/kg	10	50	mg/L	0,1	0,5
PHC F3	Exova	mg/kg	50	250	mg/L	0,1	0,5
	Maxxam	mg/kg	50	250	mg/L	0,2	1,0

* : The RPD Minimum is the minimum concentration to be reached for QA/QC Relative Percent Difference Calculation

4.1.1. SOIL SAMPLES

Seven 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 and III, respectively, 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 the individual parameter RPD values generally falling within the acceptable range. Only sample C314-15B and duplicate sample C314-BD6 show an RPD slightly higher than the 30% limit. The results are both very close to the 5-times MDL limit for RPD calculation of 5 mg/kg, and therefore do not raise any QC concern.

Results from the inter-laboratory duplicate samples indicated significantly higher RPD values for chromium and nickel (3 out of 7 samples) and arsenic (1 of 7 samples). Inter-laboratory results for samples C314-7A, 2A and 13WB do raise concern as the actual chromium and nickel concentrations are doubled and sometimes almost 10 times greater in results from Maxxam. As the intra-laboratory QC results from Exova did not raise any serious concern, other influential factors could be raised, such as:

- Sample reception date
    - 28 August 2014 for Exova
    - 04 September 2014 for Maxxam (Yellowknife)

  Samples were sent on the same day from Cambridge Bay. They apparently reached Edmonton prior to Yellowknife. This factor should only affect the volatile organic concentration.

- Sample uniformity:
    - The intra-laboratory did not point in that direction. In fact, samples C314-7A and C314-7B show comparble concentrations of chromium (7A = 17.4 mg/kg, 7B = 17.4 mg/kg) and nickel (7A = 9.9 mg/kg, 7B = 10.4 mg/kg). The same comparison can be made for C314-2A/2B (Cr = 4.6/6.6 mg/kg, Ni = 3.5/6.0 mg/kg) and C314-13WA/WB (Cr = 4.6/5.4 mg/kg, Ni = 2.2/2.9 mg/kg).
    - There may have been small bits of metal in the sample. If there are, then this would make the sample heterogeneous and therefore a lot of variability for these two elements (the metals would be present as flecks and would not be a part of the soil matrix – this creates a high level of variability in the sample). As the results are very low and well below any guideline limit, these flecks may not even be visible or may just be a part of the soil material.

- Water provided by the laboratory
    - Organic free water, supplied by Maxxam, was utilized for the 2014 Landfill Monitoring Program as field blanks and to clean field equipment as a result of the samples/supplies not being shipped by the primary lab (Exova) prior to mobilization. As the laboratory supplied water was not “metals free”, the above noted metal concentrations could be the result of external interference during collection and/or transport between site and laboratory. Both blanks did not exhibit any detectable level of metals.

- Sample preparation methods
    - Samples are often ground with a stainless steel flail grinder or in a stainless steel housing. It is possible that the metal came off at this point. As can be seen, if this is the case, very little material was transferred to the soil because the levels are well below any guideline limits.
    - It is possible that there are slight variations to the acid digestion which could lead to a higher extraction of certain recalcitrant elements. Chromium does tend to be one of those recalcitrant elements. Nickel generally does not fall in this category but if the chromium and nickel are together in a compound, this may be possible.

4.1.2. WATER SAMPLES

One blind duplicate groundwater sample (C314-15W / C314-BDW1) was submitted for intra- and inter-laboratory comparisons. The original and duplicate intra- and inter-laboratory metal, PCB and PHC sample results are summarized in Table IV, along with the calculated RPD for each parameter and average RPD for each sample. As noted in the table, mercury (which was not analysed by Exova) and all organic parameters 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 minor differences in metal concentrations between the original and intra-laboratory duplicate sample with all individual parameters falling within the acceptable performance criteria, ranging between 1.9% and 5.3%.

However, review of the inter-laboratory duplicate results indicated significantly higher RPD values. With the exception of cadmium (22.2%), all other metals had higher RPD values, ranging between 73.80% and 96.6%. As opposed to the soil results, Exova shows consistently more elevated metal concentrations than Maxxam (except for cadmium). No explanation can be provided at this time as both laboratories use the same preparation and analytical methods.

The results from the trip blank (TB) and field blank that were submitted for metals, PCB and PHC analyses are also summarized in Tables III. As shown, all of the results (except for zinc, which was detected) were below the laboratory method detection limits with the exception of trace concentrations of zinc that was equal to the detection limit in the field blank (C314-FB). No explanation can be provided for the detected zinc concentration in the field blank.

Organic free water, supplied by Maxxam, was utilized for the 2014 Landfill Monitoring Program as field blanks and to clean field equipment as a result of the samples/supplies not being shipped by the primary lab (Exova) prior to mobilization. As the laboratory supplied water was not “metals free”, the above noted metal concentrations may have been the result of external interference during collection and/or transport between site and laboratory. As both field and travel blanks did not exhibit any detectable level of metals, PCBs or TPH, this explanation is not valid.

4.2. LABORATORIES

QA/QC results from both laboratories do not raise any concern or provide any explanation concerning the concentration difference noticed in the inter-laboratory duplicate samples. It should be noted that inter-laboratory variations are common. QA/QC results from both laboratories are appended.

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’ 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: Soil Chemical Analysis Results - Intra-Laboratory Quality Assurance Samples

Sample #	Location	Depth (cm)	Parameters										F1	F2	F3
			As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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]
Detection Limit			0,2	0,01	0,5	0,1	1,0	5,0	0,5	1	0,01	0,1	10	50	50
RPD Minimum			1,0	0,05	2,5	0,5	5,0	25,0	2,5	5	0,05	0,5	50	250	250
C314-7A	C3-7	0-15	3,9	0,09	17,4	4,1	7,8	6,7	9,9	22	0,04	<0.1	<10	<50	90
C314-BD1			3,6	0,10	15,2	3,9	7,1	5,9	8,7	24	0,04	<0.1	<10	<50	<50
Relative % Difference			8,0	10,5	13,5	5,0	9,4	NA	12,9	8,7	NA	NA	NA	NA	NA
C314-2A	C3-2	0-15	1,1	<0.01	4,6	2,0	3,3	6,6	3,5	14	<0.01	<0.1	<10	<50	<50
C314-BD2			1,4	<0.01	5,0	1,8	4,2	<4.9	2,3	14	<0.01	<0.1	<10	<50	<50
Relative % Difference			24,0	NA	8,3	10,5	NA	NA	NA	0,0	NA	NA	NA	NA	NA
C314-5WB	MW-5	40-50	4,2	0,03	23,9	5,2	8,7	9,1	12,9	14	<0.01	<0.1	<10	<50	<50
C314-BD3			4,1	0,03	23,8	5,2	8,7	8,9	12,9	14	<0.01	<0.1	<10	<50	<50
Relative % Difference			2,4	NA	0,4	0,0	0,0	NA	0,0	0,0	NA	NA	NA	NA	NA
C314-2WA	MW-2	0-15	4,0	0,02	16,9	3,6	4,8	6,2	7,2	11	<0.01	<0.1	<10	<50	<50
C314-BD4			3,7	0,02	15,0	3,2	4,5	5,3	6,1	11	<0.01	<0.1	<10	<50	<50
Relative % Difference			7,8	NA	11,9	11,8	NA	NA	16,5	0,0	NA	NA	NA	NA	NA
C314-13WB	MW-13	40-50	1,1	<0.01	5,4	1,9	3,3	<4.9	2,9	9	<0.01	<0.1	<10	<50	<50
C314-BD5			1,3	0,01	6,0	2,2	3,1	<4.9	3,8	10	<0.01	<0.1	<10	<50	<50
Relative % Difference			16,7	NA	10,5	14,6	NA	NA	26,9	10,5	NA	NA	NA	NA	NA
C314-15B	C3-15	40-50	3,3	0,01	14,3	3,0	5,2	5,3	6,5	10	<0.01	<0.1	<10	<50	<50
C314-BD6			4,3	0,01	16,3	3,4	7,4	5,4	7,6	10	<0.01	<0.1	<10	<50	<50
Relative % Difference			26,3	NA	13,1	12,5	34,9	NA	15,6	0,0	NA	NA	NA	NA	NA
C314-11A	C3-11	0-15	1,6	0,04	4,9	1,6	4,0	<4.9	2,9	8	0,02	<0.1	<10	<50	70
C314-BD7			1,5	0,02	3,9	1,3	2,3	<5.0	2,2	6	0,02	<0.1	<10	<50	<50
Relative % Difference			6,5	NA	22,7	20,7	NA	NA	NA	28,6	NA	NA	NA	NA	NA

Table III: Soil Chemical Analysis Results - Inter-Laboratory Quality Assurance Samples

Sample #	Laboratory	Parameters												
		As [mg/kg]	Cd [mg/kg]	Cr [mg/kg]	Co [mg/kg]	Cu [mg/kg]	Pb [mg/kg]	Ni [mg/kg]	Zn [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		0,2	0,01	0,5	0,1	1,0	5,0	0,5	1	0,01	0,10	10	50	50
RPD Minimum (Exova)		1,0	0,05	2,5	0,5	5,0	25,0	2,5	5	0,05	0,50	50	250	250
RDL - Maxxam		1,0	0,1	1,0	1,0	5,0	1,0	1,0	10	0,05	0,01	12	10	50
RPD Minimum (Maxxam)		5,0	0,5	5,0	5,0	25,0	5,0	5,0	50	0,25	0,05	60	50	250
C314-7A	Exova	3,9	0,09	17,4	4,1	7,8	6,7	9,9	22	0,04	<0.1	<10	<50	90
	Maxxam	4,3	<0.10	38,0	3,5	6,5	5,1	18,0	20	<0.05	<0.01	<12	<10	<50
Relative % Difference		NA	NA	74,4	NA	NA	NA	58,1	9,5	NA	NA	NA	NA	NA
C314-2A	Exova	1,1	<0.01	4,6	2,0	3,3	6,6	3,5	14	<0.01	<0.1	<10	<50	<50
	Maxxam	1,8	<0.10	46,0	2,8	6,3	5,0	21,0	13	<0.05	<0.01	<12	<10	<50
Relative % Difference		NA	NA	163,6	NA	NA	27,6	142,9	NA	NA	NA	NA	NA	NA
C314-5WB	Exova	4,2	0,03	23,9	5,2	8,7	9,1	12,9	14	<0.01	<0.1	<10	<50	<50
	Maxxam	4,2	<0.10	22,0	4,6	7,9	8,4	13,0	12	<0.05	<0.01	<12	<10	<50
Relative % Difference		NA	NA	8,3	NA	NA	NA	0,8	NA	NA	NA	NA	NA	NA
C314-2WA	Exova	4,0	0,02	16,9	3,6	4,8	6,2	7,2	11	<0.01	<0.1	<10	<50	<50
	Maxxam	4,8	<0.10	16,0	3,0	<5.0	4,9	6,7	<10	<0.05	<0.01	<12	<10	<50
Relative % Difference		NA	NA	5,5	NA	NA	NA	7,2	NA	NA	NA	NA	NA	NA
C314-13WB	Exova	1,1	<0.01	5,4	1,9	3,3	<4.9	2,9	9	<0.01	<0.1	<10	<50	<50
	Maxxam	1,9	<0.10	15,0	2,3	<5.0	4,4	7,8	10	<0.05	<0.01	<12	<10	<50
Relative % Difference		NA	NA	94,1	NA	NA	NA	91,6	NA	NA	NA	NA	NA	NA
C314-15B	Exova	3,3	0,01	14,3	3,0	5,2	5,3	6,5	10	<0.01	<0.1	<10	<50	<50
	Maxxam	5,6	<0.10	18,0	2,9	6,3	6,1	8,7	<10	<0.05	<0.01	<12	<10	160
Relative % Difference		51,7	NA	22,9	NA	NA	NA	28,9	NA	NA	NA	NA	NA	NA
C314-11A	Exova	1,6	0,04	4,9	1,6	4,0	<4.9	2,9	8	0,02	<0.1	<10	<50	70
	Maxxam	1,4	<0.10	4,8	1,2	<5.0	2,5	2,6	<10	<0.05	<0.01	<12	<10	<50
Relative % Difference		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table IV: Groundwater Chemical Analysis Results - Quality Assurance Samples

Sample #	Location	Parameters												
		As [mg/L]	Cd [mg/L]	Cr [mg/L]	Co [mg/L]	Cu [mg/L]	Pb [mg/L]	Ni [mg/L]	Zn [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]
MDL (Exova)		0,0002	0,00001	0,0005	0,0001	0,0010	0,0001	0,0005	0,001	0,00005	0,10	0,2	0,1	0,1
RPD Minimum (Exova)		0,0010	0,00005	0,0025	0,0005	0,0050	0,0005	0,0025	0,005	0,00025	0,50	1,0	0,5	0,5
MDL (Maxxam)		0,0002	0,00002	0,0010	0,0003	0,0002	0,0002	0,0005	0,003	0,00010	0,05	0,1	0,1	0,2
RPD Minimum (Maxxam)		0,0010	0,00010	0,0050	0,0015	0,0010	0,0010	0,0025	0,015	0,00050	0,25	0,5	0,5	1,0
Intra-Lab Duplicate Samples (Exova)														
C314-15W	MW-15	0,0152	0,00030	0,0947	0,0083	0,0370	0,0089	0,0803	0,111		<0.1	<0.2	<0.2	<0.1
C314-BDW1		0,0157	0,00032	0,0929	0,0087	0,0380	0,0092	0,0776	0,117		<0.1	<0.2	<0.2	<0.1
Relative % Difference		3,2	6,5	1,9	4,7	2,7	3,3	3,4	5,3	NA	NA	NA	NA	NA
Inter-Lab Duplicate Samples (Exova-Maxxam)														
C314-15W	Exova	0,0152	0,00030	0,0947	0,0083	0,0370	0,0089	0,0803	0,111		<0.1	<0.2	<0.2	<0.1
	Maxxam	0,0053	0,00024	0,0360	0,0030	0,0160	0,0041	0,0280	0,043	<0.00002	<0.1	<0.2	<0.2	<0.1
Relative % Difference		96,6	22,2	89,8	93,8	79,2	73,8	96,6	88,3	NA	NA	-	-	-
C314-FB	Field Blank	<0.0002	<0.00001	<0.00005	<0.001	<0.001	<0.0001	<0.0005	0,001	NA	<0.1	<0.2	<0.2	<0.1
C1/314-TB	Travel Blank	<0.0002	<0.00001	<0.00005	<0.001	<0.001	<0.0001	<0.0005	<0.001	NA	<0.1	<0.2	<0.2	<0.1

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Quality Control

Bill To:	SILA Remediation	Project:		Lot ID:	**1023068**
Report To:	SILA Remediation	ID:	CAM-3 2014	Control Number:	
	250-1260 Boul Lebourgneuf	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Quebec, QC, Canada	Location:	Sheperd Bay	Date Reported:	Mar 17, 2015
	G2K 2G2	LSD:		Report Number:	1995982
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

Hot Water Soluble

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Boron	mg/L	0.0028	-0.01	0.02		yes
Date Acquired:	August 29, 2014					
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
Boron	mg/kg	1.51	1.61	10	0.10	yes
Date Acquired:	August 29, 2014					
Control Sample	**Units**	**Measured**	**Lower Limit**	**Upper Limit**		**Passed QC**
Boron	mg/kg	1.39	1.07	2.05		yes
Date Acquired:	August 29, 2014					
Boron	mg/kg	0.10	0.09	0.11		yes
Date Acquired:	August 29, 2014					

Metals Strong Acid Digestion

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Mercury	ug/L	-0.02	-0.07	0.13		yes
Antimony	ug/L	0.129	-0.1	0.2		yes
Arsenic	ug/L	0.012	-0.2	0.2		yes
Barium	ug/L	0.424	-1	1		yes
Beryllium	ug/L	0.02	-0.1	0.1		yes
Cadmium	ug/L	-0.006	-0.01	0.01		yes
Chromium	ug/L	0.044	-0.5	0.5		yes
Cobalt	ug/L	0.006	-0.1	0.1		yes
Copper	ug/L	0.34	-0.6	1.2		yes
Lead	ug/L	1.641	-5.0	5.0		yes
Molybdenum	ug/L	0.062	-1.0	1.0		yes
Nickel	ug/L	0.112	-0.4	0.7		yes
Selenium	ug/L	0.014	-0.3	0.3		yes
Silver	ug/L	0.133	-0.09	0.14		yes
Thallium	ug/L	-0.015	-0.04	0.04		yes
Tin	ug/L	4.283	0.0	7.2		yes
Uranium	ug/L	0.155	-0.5	0.5		yes
Vanadium	ug/L	0.061	-0.1	0.1		yes
Zinc	ug/L	0.116	-1	1		yes
Date Acquired:	August 29, 2014					
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
Mercury	mg/kg	0.02	0.02	10	0.03	yes
Antimony	mg/kg	<0.2	<0.2	20	0.4	yes
Arsenic	mg/kg	5.2	5.1	20	0.4	yes
Barium	mg/kg	158	148	20	2	yes
Beryllium	mg/kg	0.4	0.4	20	0.2	yes
Cadmium	mg/kg	0.22	0.21	20	0.02	yes
Chromium	mg/kg	15.5	14.4	20	1.1	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Strong Acid Digestion - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Cobalt	mg/kg	6.9	6.6	20	0.2	yes
Copper	mg/kg	14.8	15.7	20	2.2	yes
Lead	mg/kg	58.1	54.1	20	0.2	yes
Molybdenum	mg/kg	<1.0	<1.0	20	2.2	yes
Nickel	mg/kg	19.4	20.3	20	1.1	yes
Selenium	mg/kg	<0.3	<0.3	20	0.7	yes
Silver	mg/kg	0.2	0.2	20	0.22	yes
Thallium	mg/kg	0.12	0.11	20	0.11	yes
Tin	mg/kg	1.7	1.6	20	2.2	yes
Uranium	mg/kg	0.6	0.6	20	1.1	yes
Vanadium	mg/kg	20.8	20.3	20	0.2	yes
Zinc	mg/kg	82	75	20	2	yes
Date Acquired:	August 29, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	mg/kg	0.32	0.28	0.34	yes
Antimony	mg/kg	37.8	36.1	43.9	yes
Arsenic	mg/kg	39.8	36.7	44.3	yes
Barium	mg/kg	191	185	215	yes
Beryllium	mg/kg	20.0	17.4	22.2	yes
Cadmium	mg/kg	2.07	1.80	2.20	yes
Chromium	mg/kg	99.0	92.2	105.8	yes
Cobalt	mg/kg	20.8	18.5	22.5	yes
Copper	mg/kg	192	176.3	207.3	yes
Lead	mg/kg	21.5	18.6	21.8	yes
Molybdenum	mg/kg	197	172.6	215.4	yes
Nickel	mg/kg	97.2	90.6	107.4	yes
Selenium	mg/kg	38.2	36.1	42.9	yes
Silver	mg/kg	19.7	16.69	21.97	yes
Thallium	mg/kg	10.0	9.57	11.23	yes
Tin	mg/kg	187	171.9	201.9	yes
Uranium	mg/kg	102	90.3	108.0	yes
Vanadium	mg/kg	17.7	16.3	20.3	yes
Zinc	mg/kg	192	180	220	yes
Date Acquired:	August 29, 2014				
Mercury	mg/kg	0.08	0.05	0.11	yes
Date Acquired:	August 29, 2014				
Mercury	mg/kg	0.33	0.15	0.42	yes
Antimony	mg/kg	1.0	0.3	1.1	yes
Arsenic	mg/kg	81.6	65.9	97.9	yes
Barium	mg/kg	251	213	270	yes
Beryllium	mg/kg	0.7	0.5	0.9	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Strong Acid Digestion - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Cadmium	mg/kg	1.90	1.50	2.64	yes
Chromium	mg/kg	35.6	27.4	39.2	yes
Cobalt	mg/kg	13.6	11.3	16.0	yes
Copper	mg/kg	197	162.7	222.9	yes
Lead	mg/kg	126	99.6	135.6	yes
Molybdenum	mg/kg	2.6	2.0	3.8	yes
Nickel	mg/kg	60.4	47.1	73.5	yes
Selenium	mg/kg	0.6	0.3	1.3	yes
Silver	mg/kg	1	0.25	1.15	yes
Thallium	mg/kg	0.32	0.26	0.40	yes
Tin	mg/kg	4.0	1.0	5.4	yes
Uranium	mg/kg	1.2	0.9	1.5	yes
Vanadium	mg/kg	42.5	31.5	56.1	yes
Zinc	mg/kg	473	355	550	yes

Date Acquired: August 29, 2014

Metals Total

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	0.0043	-0.01	0.02	yes
Calcium	mg/L	0.0071	-0.1	0.1	yes
Iron	mg/L	0.0015	-0.01	0.02	yes
Magnesium	mg/L	0.0054	-0.04	0.04	yes
Manganese	mg/L	-0.0001	-0.003	0.003	yes
Potassium	mg/L	0.014	-0.1	0.2	yes
Silicon	mg/L	0.0026	-0.03	0.04	yes
Sodium	mg/L	0.0134	-0.1	0.2	yes
Sulfur	mg/L	0.0123	-0.1	0.2	yes
Antimony	ug/L	0.00028326	-0.2	0.2	yes
Arsenic	ug/L	0.0134757	-0.2	0.2	yes
Barium	ug/L	0.00987838	-1	1	yes
Beryllium	ug/L	0	-0.1	0.1	yes
Bismuth	ug/L	0.00671813	-0.5	0.5	yes
Boron	ug/L	0.0826097	-1	3	yes
Cadmium	ug/L	0.00957206	-0.007	0.012	yes
Chromium	ug/L	0.00351784	-0.7	0.3	yes
Cobalt	ug/L	-0.00132446	-0.1	0.1	yes
Copper	ug/L	0.796508	-1	1	yes
Lead	ug/L	0.00554493	-0.1	0.1	yes
Lithium	ug/L	0.0120698	-1	1	yes
Molybdenum	ug/L	0.0573581	-1	1	yes
Nickel	ug/L	-0.00784534	-0.5	0.5	yes
Selenium	ug/L	0.0089705	-0.2	0.2	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Total - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Silver	ug/L	0.00226237	-0.02	0.10	yes
Strontium	ug/L	0.0330841	-1	1	yes
Thallium	ug/L	0.00173928	-0.05	0.05	yes
Tin	ug/L	-0.0331463	-1	1	yes
Titanium	ug/L	0	-0.5	0.5	yes
Uranium	ug/L	0.00181467	-0.5	0.5	yes
Vanadium	ug/L	0.0875498	-0.1	0.1	yes
Zinc	ug/L	0.643524	-0	1	yes
Zirconium	ug/L	0.00970992	-1	1	yes

Date Acquired: September 02, 2014

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aluminum	mg/L	13.1	13.6	15	0.03	yes
Calcium	mg/L	169	170	15	0.6	yes
Iron	mg/L	22.8	23.7	15	0.20	yes
Magnesium	mg/L	71.3	71.7	15	0.40	yes
Manganese	mg/L	0.320	0.326	15	0.010	yes
Potassium	mg/L	13.9	14.1	15	1.2	yes
Silicon	mg/L	16.4	17.0	15	0.10	yes
Sodium	mg/L	261	262	15	1.2	yes
Sulfur	mg/L	146	148	15	0.1	yes
Antimony	ug/L	<0.2	<0.2	15	0.4	yes
Arsenic	ug/L	0.5	0.5	15	0.4	yes
Barium	ug/L	179	179	15	2	yes
Beryllium	ug/L	<0.1	<0.1	15	0.2	yes
Bismuth	ug/L	<0.5	<0.5	15	1.1	yes
Boron	ug/L	9	8	15	4	yes
Cadmium	ug/L	<0.005	<0.005	15	0.022	yes
Chromium	ug/L	<0.5	<0.5	15	1.1	yes
Cobalt	ug/L	<0.1	<0.1	15	0.2	yes
Copper	ug/L	<1	<1	15	2	yes
Lead	ug/L	0.1	0.1	15	0.2	yes
Lithium	ug/L	4	4	15	2	yes
Molybdenum	ug/L	<1	<1	15	2	yes
Nickel	ug/L	<0.5	<0.5	15	1.1	yes
Selenium	ug/L	<0.2	<0.2	15	0.4	yes
Silver	ug/L	<0.01	<0.01	15	0.22	yes
Strontium	ug/L	306	316	15	2	yes
Thallium	ug/L	<0.05	<0.05	15	0.11	yes
Tin	ug/L	<1	<1	15	2	yes
Titanium	ug/L	2.6	2.4	15	1.1	yes
Uranium	ug/L	<0.5	<0.5	15	1.1	yes
Vanadium	ug/L	0.2	0.2	15	0.2	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Total - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Zinc	ug/L	2	3	15	2	yes
Zirconium	ug/L	<10	<10	15	2	yes
Date Acquired:	September 02, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aluminum	mg/L	4.08	3.46	4.30	yes
Calcium	mg/L	50.9	45.5	52.7	yes
Iron	mg/L	2.08	1.83	2.19	yes
Magnesium	mg/L	19.7	18.14	22.14	yes
Manganese	mg/L	0.526	0.442	0.538	yes
Potassium	mg/L	49.6	45.8	55.8	yes
Silicon	mg/L	2.06	1.81	2.21	yes
Sodium	mg/L	50.3	45.9	56.0	yes
Sulfur	mg/L	10.4	8.9	10.9	yes
Antimony	ug/L	12.2	10.8	13.2	yes
Arsenic	ug/L	12.4	10.4	12.5	yes
Barium	ug/L	64	54	68	yes
Beryllium	ug/L	6.0	4.9	6.8	yes
Bismuth	ug/L	29.6	24.8	34.4	yes
Boron	ug/L	121	102	139	yes
Cadmium	ug/L	0.664	0.473	0.781	yes
Chromium	ug/L	31.7	26.5	33.7	yes
Cobalt	ug/L	6.2	5.2	6.7	yes
Copper	ug/L	65	53	67	yes
Lead	ug/L	6.3	5.2	7.1	yes
Lithium	ug/L	62	53	77	yes
Molybdenum	ug/L	63	56	66	yes
Nickel	ug/L	32.3	25.6	33.4	yes
Selenium	ug/L	11.7	9.9	12.3	yes
Silver	ug/L	6.51	5.39	7.13	yes
Strontium	ug/L	61	54	69	yes
Thallium	ug/L	3.26	2.81	3.89	yes
Tin	ug/L	63	56	66	yes
Titanium	ug/L	32.6	26.6	35.7	yes
Uranium	ug/L	29.6	25.7	36.3	yes
Vanadium	ug/L	6.4	5.1	7.2	yes
Zinc	ug/L	61	53	67	yes
Zirconium	ug/L	64	53	67	yes
Date Acquired:	September 02, 2014				
Antimony	ug/L	41.0	37.5	43.1	yes
Arsenic	ug/L	41.0	37.7	44.7	yes
Barium	ug/L	206	190	214	yes
Beryllium	ug/L	19.1	17.4	22.2	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Bismuth	ug/L	93.5	91.3	106.3	yes
Boron	ug/L	387	343	436	yes
Cadmium	ug/L	2.11	1.915	2.205	yes
Chromium	ug/L	101	90.0	110.0	yes
Cobalt	ug/L	19.9	18.1	21.4	yes
Copper	ug/L	202	185	208	yes
Lead	ug/L	19.4	18.6	21.8	yes
Lithium	ug/L	194	173	222	yes
Molybdenum	ug/L	206	189	225	yes
Nickel	ug/L	103	90.0	110.0	yes
Selenium	ug/L	40.0	36.1	42.9	yes
Silver	ug/L	20.3	18.00	22.00	yes
Strontium	ug/L	192	182	212	yes
Thallium	ug/L	9.42	9.16	10.96	yes
Tin	ug/L	200	191	213	yes
Titanium	ug/L	106	91.5	106.3	yes
Uranium	ug/L	93.9	90.2	109.0	yes
Vanadium	ug/L	20.6	16.9	22.1	yes
Zinc	ug/L	202	183	218	yes
Date Acquired:	September 02, 2014				
Antimony	ug/L	11.6	10.8	13.2	yes
Arsenic	ug/L	12.4	11.2	13.6	yes
Barium	ug/L	60	54	66	yes
Beryllium	ug/L	5.7	5.2	6.5	yes
Bismuth	ug/L	28.5	27.0	33.0	yes
Boron	ug/L	112	108	132	yes
Cadmium	ug/L	0.629	0.560	0.692	yes
Chromium	ug/L	30.7	27.0	33.0	yes
Cobalt	ug/L	6.1	5.4	6.6	yes
Copper	ug/L	64	54	66	yes
Lead	ug/L	6.0	5.4	6.6	yes
Lithium	ug/L	58	53	66	yes
Molybdenum	ug/L	59	54	66	yes
Nickel	ug/L	31.2	27.0	33.0	yes
Selenium	ug/L	11.5	10.3	13.4	yes
Silver	ug/L	6.05	5.40	6.60	yes
Strontium	ug/L	60	54	66	yes
Thallium	ug/L	2.96	0.00	6.00	yes
Tin	ug/L	61	54	66	yes
Titanium	ug/L	32.7	27.0	33.0	yes
Uranium	ug/L	28.8	27.0	33.0	yes
Vanadium	ug/L	6.3	5.4	6.6	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Zinc	ug/L	61	57	69	yes
Zirconium	ug/L	61	54	66	yes
Date Acquired:	September 02, 2014				
Antimony	ug/L	2.0	1.8	2.2	yes
Arsenic	ug/L	2.1	1.8	2.3	yes
Barium	ug/L	10	9	11	yes
Beryllium	ug/L	1	0.8	1.1	yes
Bismuth	ug/L	5.2	4.5	5.4	yes
Boron	ug/L	20	17	23	yes
Cadmium	ug/L	0.103	0.092	0.116	yes
Chromium	ug/L	5.2	4.6	5.4	yes
Cobalt	ug/L	1.0	0.9	1.1	yes
Copper	ug/L	11	9	11	yes
Lead	ug/L	1.0	0.9	1.1	yes
Lithium	ug/L	10	9	11	yes
Molybdenum	ug/L	10	9	11	yes
Nickel	ug/L	5.2	4.5	5.5	yes
Selenium	ug/L	1.9	1.6	2.2	yes
Silver	ug/L	1.00	0.87	1.07	yes
Strontium	ug/L	10	9	11	yes
Thallium	ug/L	0.50	0.48	0.57	yes
Tin	ug/L	10	10	11	yes
Titanium	ug/L	4.7	4.5	5.4	yes
Uranium	ug/L	4.8	4.5	5.5	yes
Vanadium	ug/L	1.0	0.8	1.1	yes
Zinc	ug/L	10	9	11	yes
Zirconium	ug/L	10	9	11	yes
Date Acquired:	September 02, 2014				
Aluminum	mg/L	19.0	18.80	20.60	yes
Calcium	mg/L	239	230.0	257.6	yes
Iron	mg/L	9.43	9.07	10.15	yes
Magnesium	mg/L	95.5	92.78	104.72	yes
Manganese	mg/L	2.39	2.260	2.560	yes
Potassium	mg/L	237	232.2	259.9	yes
Silicon	mg/L	9.88	9.48	10.74	yes
Sodium	mg/L	238	226.8	267.4	yes
Sulfur	mg/L	148	136.5	166.3	yes
Date Acquired:	September 02, 2014				
Aluminum	mg/L	3.98	3.46	4.44	yes
Calcium	mg/L	51.0	45.0	55.0	yes
Iron	mg/L	2.08	1.80	2.20	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Metals Total - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Magnesium	mg/L	19.8	17.99	22.01	yes
Manganese	mg/L	0.526	0.449	0.551	yes
Potassium	mg/L	49.5	45.0	55.0	yes
Silicon	mg/L	2.07	1.92	2.22	yes
Sodium	mg/L	50.2	45.0	55.0	yes
Sulfur	mg/L	10.4	9.0	11.0	yes
Date Acquired:	September 02, 2014				
Aluminum	mg/L	0.39	0.36	0.44	yes
Calcium	mg/L	5.1	4.6	5.6	yes
Iron	mg/L	0.21	0.18	0.22	yes
Magnesium	mg/L	1.96	1.84	2.18	yes
Manganese	mg/L	0.052	0.046	0.056	yes
Potassium	mg/L	4.9	4.5	5.5	yes
Silicon	mg/L	0.20	0.18	0.22	yes
Sodium	mg/L	4.9	4.7	5.5	yes
Sulfur	mg/L	3.0	2.8	3.2	yes
Date Acquired:	September 02, 2014				

Mono-Aromatic Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-0.005	0.005	yes
Toluene	ng	0	-0.06	0.06	yes
Ethylbenzene	ng	0	-0.030	0.030	yes
Total Xylenes (m,p,o)	ng	0	-0.09	0.09	yes
Styrene	ng	0	-0.030	0.030	yes
Date Acquired:	August 28, 2014				

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	ng	102.60	85	115	yes
Toluene	ng	94.00	85	115	yes
Ethylbenzene	ng	87.20	85	115	yes
Total Xylenes (m,p,o)	ng	86.67	85	115	yes
Styrene	ng	85.80	85	115	yes
Date Acquired:	August 28, 2014				

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	mg/kg	<0.005	<0.005	50	0.010	yes
Toluene	mg/kg	<0.02	<0.02	50	0.04	yes
Ethylbenzene	mg/kg	<0.010	<0.010	50	0.020	yes
m,p-Xylene	mg/kg	<0.02	<0.02	50	0.04	yes
o-Xylene	mg/kg	<0.02	<0.02	50	0.04	yes
Total Xylenes (m,p,o)	mg/kg	<0.03	<0.03	50	0.06	yes
Styrene	mg/kg	<0.010	<0.010	50	0.020	yes
Date Acquired:	August 28, 2014					

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID: **1023068**
Control Number:
Date Received: Aug 28, 2014
Date Reported: Mar 17, 2015
Report Number: 1995982

Mono-Aromatic Hydrocarbons - Soil - Continued

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	mg/kg	108	80	120	yes
Toluene	mg/kg	101	80	120	yes
Ethylbenzene	mg/kg	92	80	120	yes
Total Xylenes (m,p,o)	mg/kg	96	80	120	yes

Date Acquired: August 28, 2014

Mono-Aromatic Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-0.002	0.002	yes
Toluene	ng	0	-0.0015	0.0015	yes
Ethylbenzene	ng	0	-0.002	0.002	yes
Total Xylenes (m,p,o)	ng	0	-0.002	0.002	yes
Styrene	ng	0	-0.002	0.002	yes

Date Acquired: September 04, 2014

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Benzene	ng	100.60	85	115	yes
Toluene	ng	96.80	85	115	yes
Ethylbenzene	ng	100.80	85	115	yes
Total Xylenes (m,p,o)	ng	100.00	85	115	yes
Styrene	ng	88.20	85	115	yes

Date Acquired: September 04, 2014

Volatile Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
F1 C6-C10	ng	0	-10	10	yes

Date Acquired: August 28, 2014

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
F1 C6-C10	mg/kg	<10	<10	50	0	yes
F1 -BTEX	mg/kg	<10	<10	50	0	yes

Date Acquired: August 28, 2014

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F1 C6-C10	mg/kg	108	80	120	yes

Date Acquired: August 28, 2014

Volatile Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
F1 -BTEX	ng	0	-0.3	0.3	yes
F1 C6-C10	ng	0	-0.3	0.3	yes
F2 C10-C16	ng	0	-0.3	0.3	yes

Date Acquired: September 04, 2014

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Volatile Petroleum Hydrocarbons - Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F2 C10-C16	ng	91.00	80	120	yes

Date Acquired: September 04, 2014

Extractable Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
F2c C10-C16	ug/mL	0	-10	10	yes
F3c C16-C34	ug/mL	0	-30	30	yes
F4c C34-C50	ug/mL	0	-20	20	yes
F4HTGCc C34-C50+	ug/mL	0	-20	20	yes

Date Acquired: August 28, 2014

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F2c C10-C16	ug/mL	104.40	85	115	yes
F3c C16-C34	ug/mL	104.53	85	115	yes
F4c C34-C50	ug/mL	101.23	85	115	yes
F4HTGCc C34-C50+	ug/mL	98.18	85	115	yes

Date Acquired: August 28, 2014

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
F2c C10-C16	mg/kg	<50	<50	50	10	yes
F3c C16-C34	mg/kg	<50	<50	50	10	yes
F4c C34-C50	mg/kg	<100	<100	50	10	yes
F4HTGCc C34-C50+	mg/kg	<100	<100	50	10	yes

Date Acquired: August 28, 2014

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F2c C10-C16	mg/kg	112	65	135	yes
F3c C16-C34	mg/kg	115	65	135	yes
F4c C34-C50	mg/kg	110	65	135	yes
F4HTGCc C34-C50+	mg/kg	109	65	135	yes

Date Acquired: August 28, 2014

Extractable Petroleum Hydrocarbons - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
F2 C10-C16	ug/mL	0	-0.2	0.2	yes
F3 C16-C34	ug/mL	0	-0.2	0.2	yes
F3+ C34+	ug/mL	0	-0.2	0.2	yes

Date Acquired: August 29, 2014

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F2 C10-C16	ug/mL	102.79	85	115	yes
F3 C16-C34	ug/mL	104.24	85	115	yes

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Quality Control

Bill To:	SILA Remediation	Project:		Lot ID:	**1023068**
Report To:	SILA Remediation	ID:	CAM-3 2014	Control Number:	
	250-1260 Boul Lebourgneuf	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Quebec, QC, Canada	Location:	Sheperd Bay	Date Reported:	Mar 17, 2015
	G2K 2G2	LSD:		Report Number:	1995982
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

Extractable Petroleum Hydrocarbons - Water - Continued

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F3+ C34+	ug/mL	96.94	85	115	yes
Date Acquired:	August 29, 2014				

Polychlorinated Biphenyls - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aroclor 1016	ug/mL	0	-0.3	0.3	yes
Aroclor 1221	ug/mL	0	-0.3	0.3	yes
Aroclor 1232	ug/mL	0	-0.3	0.3	yes
Aroclor 1242	ug/mL	0	-0.3	0.3	yes
Aroclor 1248	ug/mL	0	-0.3	0.3	yes
Aroclor 1254	ug/mL	0	-0.3	0.3	yes
Aroclor 1260	ug/mL	0	-0.3	0.3	yes
Aroclor 1262	ug/mL	0	-0.3	0.3	yes
Aroclor 1268	ug/mL	0	-0.3	0.3	yes
Date Acquired:	August 28, 2014				

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aroclor 1254	ug/mL	120.00	80	120	yes
Date Acquired:	August 28, 2014				

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aroclor 1016	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1221	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1232	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1242	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1248	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1254	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1260	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1262	mg/kg	<0.1	<0.1	50	0.2	yes
Aroclor 1268	mg/kg	<0.1	<0.1	50	0.2	yes
Total PCBs	mg/kg	<0.1	<0.1	50	0.2	yes
Date Acquired:	August 28, 2014					

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aroclor 1242	mg/kg	108	50	150	yes
Aroclor 1254	mg/kg	76	50	150	yes
Date Acquired:	August 28, 2014				

Polychlorinated Biphenyls - Soil - Surrogate

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Decachlorobiphenyl	%	126.285	50	150	yes
Date Acquired:	August 28, 2014				

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Quality Control

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Polychlorinated Biphenyls - Water

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Aroclor 1016	ug/mL	0	-0.3	0.3	yes
Aroclor 1221	ug/mL	0	-0.3	0.3	yes
Aroclor 1232	ug/mL	0	-0.3	0.3	yes
Aroclor 1242	ug/mL	0	-0.3	0.3	yes
Aroclor 1248	ug/mL	0	-0.3	0.3	yes
Aroclor 1254	ug/mL	0	-0.3	0.3	yes
Aroclor 1260	ug/mL	0	-0.3	0.3	yes
Aroclor 1262	ug/mL	0	-0.3	0.3	yes
Aroclor 1268	ug/mL	0	-0.3	0.3	yes
Date Acquired:	September 02, 2014				

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aroclor 1254	ug/mL	110.00	80	120	yes
Date Acquired:	September 02, 2014				

Polychlorinated Biphenyls - Water - Surrogate

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Decachlorobiphenyl	%	73.0161	50	150	yes
Date Acquired:	September 02, 2014				

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Boron in general soil	McKeague	*	Hot Water Soluble Boron - Azomethine-H Method, 4.61	29-Aug-14	Exova Edmonton
BTEX-CCME - Soil	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	28-Aug-14	Exova Calgary
BTEX-CCME - Soil	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	28-Aug-14	Exova Calgary
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	04-Sep-14	Exova Calgary
Mercury (Hot Block) in Soil	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	29-Aug-14	Exova Edmonton
Mercury (Hot Block) in Soil	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	02-Sep-14	Exova Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	*	Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	29-Aug-14	Exova Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	*	Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	02-Sep-14	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	02-Sep-14	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	02-Sep-14	Exova Edmonton
PCB - Soil	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	28-Aug-14	Exova Calgary
PCB - Water	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	02-Sep-14	Exova Calgary
TEH-CCME - Water	EPA/CCME	*	Separatory Funnel Liquid-liquid Extraction/CCME, EPA 3510/CCME	29-Aug-14	Exova Calgary
TEH-CCME-Soil (Shake)	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	28-Aug-14	Exova Calgary

** Reference Method Modified*

References

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

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	SILA Remediation	Project:	
Report To:	SILA Remediation	ID:	CAM-3 2014
	250-1260 Boul Lebourgneuf	Name:	2014 LFM
	Quebec, QC, Canada	Location:	Sheperd Bay
	G2K 2G2	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663
Sampled By:	A. Passalis	Acct code:	
Company:	Sila		

Lot ID:	**1023068**
Control Number:	
Date Received:	Aug 28, 2014
Date Reported:	Mar 17, 2015
Report Number:	1995982

APHA	Standard Methods for the Examination of Water and Wastewater

Comments:

- Report was issued to include QC results as requested by Jean-Pierre Pelletier on March 17, 2015. Previous report 1943943.

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

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Analytical Report

Bill To:	SILA Remediation	Project:		Lot ID:	**1023068**
Report To:	SILA Remediation	ID:	CAM-3 2014	Control Number:	
	250-1260 Boul Lebourgneuf	Name:	2014 LFM	Date Received:	Aug 28, 2014
	Quebec, QC, Canada	Location:	Sheperd Bay	Date Reported:	Mar 17, 2015
	G2K 2G2	LSD:		Report Number:	1995982
Attn:	Jean-Pierre Pelletier	P.O.:	14.071-309663		
Sampled By:	A. Passalis	Acct code:			
Company:	Sila				

Petroleum Hydrocarbons in Soil

Batch Notes

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

Approved by:

Angela Lyster
Client Services Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

ANNEX 3

FIELD NOTES AND CHAINS OF CUSTODY FORMS

INSTALL DATALOGGERS.

CAM.4 V.T.3 Upper SITE LF
6 Tier II
8 Tier II
10 Lower Site

2 HRS HOLD @ KUGARUK, 5-7pm

CAM-3 SETUP CAMP
8-10pm.

CAM.3 C314 3°C, OVERCAST
AUGUST 22, 2014 30Km/NW
0800-1200

NON-HAZARDOUS WASTE LANDFILL

530 MW-1 - V-NW
SWL: 55-18
∇ dry bott: 179

532 V-W FROM ROAD
533 V- SW/NW FROM E TOE
534 V-SW @ N SLOPE
535 " "
536 V-SE/SW @ N TOE
537 V- S @ N CRNR
538 MW-2 Slup 64-29
∇ dry bott 161
539 V - SE @ W SLOPE
540 " "
541 MW-3 SLUP - 76-32
∇ dry bott 181
542 V-E @ W CRNR
543 V-NE @ S. SLOPE
544 " "
545 V-NE/SE @ W-TOE
546 V-NW/NE @ S TOE

C314-1 WAB 3.4m NE.
LT BRN GRAVEL, W/ SAND, DAMP
0+10 40-50

LEVEL

(50)

S47 SM POTHOLE ON CREST OF LOWER BENCH
V-NE/NW 30x40x5

S48 SUBTLE LIN. DEPR. @ TOE OF TOP BENCH SLOPE
1m x 15 x 2 ↓ V-NW/NE

S49 DEPR. @ CREST OF LOWER BENCH
V-NE/NW 50x30x10↓

S50 V-NW/SE @ E CRNR, PAN N-S

S51 V-SE/SW @ N CRNR

S52 SM DEPR. 5m below crest V-SW/SE
40 x 15-30 x 5↓

C3&4-2w (A)/B (BD.4) V
GREY/BRN SAND w/GRAVEL, DAMP
TR ORG TO 10 0-16 TSD4
40-50

S53 MIN EROS OF FINES, TOP -> ½,
6m x 20 x 1-2 self crn, dep of
fines on slope, V-NW/SE

S54 " EROS, STARTS 1M BEFORE
CREST, ENDS @ S52, V-NW

S55 MIN EROS CREST TO ½ way - self
V-NW/SE 6m, 20-30 x 1-2 fines only crn

S56 V-SE/SW @ N CRNR, PAN SW-E

C5&4-3w/A/B T.S.NE
LT BRN/GREY SAND, W GRAVEL, DAMP, TR
ORG TO 10, 0-10-

(51)

S57 MIN POTHOLE (SAME), V-NE
20x10x5↓

S58 V-SE ACROSS COVER

S59, S60 " "

S61 V-NE/SW @ LIN DEPR @ CREST
7m x 30 x 5↓

S62 DEP. BELOW CREST, V-SE/NE
1 x 15 x 0.5↓-7

S63 V-NE/NW @ S CRNR

S64, 65, 66 V-NW ACROSS COVER

S67 EXP. DEBRIS SAME, V-SE

STATION LANDFILL

LOBE A

S68 V-S @ LOBE A, Veg in center

S69 V-W, SSE, E W ALONG TOE

S70 V-S @ WETTED AREA / NO SIG STAINING

S71 V-N @ " " / IN GRASS AREA
2 SPOTS ON SLOPE, LT ORANGE
30-15 m L, 20-10 W, See photo

S72 PAN NE-W ACROSS COVER

LOBE B

S73 C3&4-5 A/B. 0- BRN SAND, TR CRAV
15 - DK BRN SAND, TR ORG.
V-NE 0-10 40-50

LEVEL

(52)

574 PAN SE-NE

575 V. NE @ W SIDE, SE/NW @ MIN EROS.
7m x 2 x 10w, 2↓, FINES ONLY

576 MIN EROS OF FINES, V. NW/SE
5m, 10-15 x 2-5↓

577 START OF CRACK (MOSTLY INFILLED)
FOLLOW TRACK V-S, 578 - 579, 580 (4m, 3m, 19m)
581 CLOSE UP SEM W. 10cm V-N TOTOE.
" UP TO 11cm ↓
LOCALIZED AREAS ON COVER W NO GRANULAR (SEE PHOTOS)

582 V. NW/SE AT SW SLOPE.

583 V. NW @ POTHOLE @ CREST 20x20 x5↓

584, 5, 6 MIN EROS ON SLOPE 3-5ML.
20-30W x 2-5↓ V. NW/SE @ MIDDLE

587 V-NW/E ALONG SIDE, PAN SE-W

588 C314-6 A/B. 0-10, 40-50
BRN/GREY SILTY SAND, W GRAV.

589 MIN EROSION ON SLOPE 4m x 50 x 2↓
FINES ONLY V: N/S.

590 Y shaped erosion @ crest + down
V: N/S. 3-6mL x 10-20W x 5↓

591 - NO CHANNELS, ONLY FINES, V-N

592 - V NW W/E ALONG TOE

(53)

593 V-N/S @ EROS (WINDING)
13m, 20-30w.

594 START OF EROS, ALSO POTHOLE 30x30x5
V-S

595 EXP METAL DEBRIS, V-N.
V- NW ALONG TOE OF MID-SLOPE

596 AREA OF EROSION ON SLOPE 2.5m W
V-N/S, 20mL, 2-5↓

598 C314-7 (A)/B (BD1) ✓
0- BLK ORG + ROOTLETS TR. SAND
10- DK BRN ROCK, GRAVEL, SOME SAND.

597 V-W ALONG TOE

599 V. NNE @ MIN EROS AT TOE
40W x 10mL, FINES LOST.

600 V-SSW/NW @ E CORN.

601 V-SSE @ FINES WASH TO TOE 10W, 2↓

602 " " " "

603 PAN NW-SW.

604 EROSION ON S SLOPE V-SE
OVERALL AREA IS 6m x 4m x 1-5↓

605 MOD DEPRESSION ABOVE CREST V-NW
2m x 1m x 5-10↓

606 DEPR @ CREST V-SE 1m x 30 x 5↓

607 " ABOVE CREST 50 x 30 x 5↓ V-NW

608 " 2m x 10-10W x 2-5↓ V-SE

LEVEL

609 MIN DEPR // CREST 70x20x5↓ V-NW

610 MIN EROSION @ CREST 4mx20x2↓
V-SE/NE

611 VNW @ START OF CHANNEL, MIN
EROSION OF FINES

612 EXP WOOD DEBRIS -, V-W @ DRAINAGE

613 PAN W-SE

614 C374-4 A/B. LT BRN, SAND, W/
ROCK + TR. SILT. 0-10
40-50

615 LIN DEPRESSION // SLOPE V-NW/SW
1.3x25x5↓

616 LOC. DEPRESSION 30x20x3↓ V-SE/SW.

617 START OF EROSION. V-SW 30-2m W-
↳ 618 V-NE @ WIDENS/DEP. FINES 1-5↓

619 V-NE AT MIN EROSION
↳ 620 V-SW AT TOP 10-30W, 2-5↓

621 V-SE ALONG SLOPE

622 MIN DEPR. V-SE 20x10x5↓

623 MIN EROS ON TOP SLOPE - 2 AREAS
V-NE 1mx50W, 1-3↓ WASH FINES ONLY.

624 V-SW/SW. BOTH AREAS.

625 BASE & MIN EROS OF FINES ON SLOPE
V-NE/SW 2mL, 1-3W, 1-2↓

626 PAN NE-W. C.S. FACE

LOBE C

C314-8 A/B. GW 627.
LT BRN/TAN SILT, TR F. SAND, DAMP
0-10 40-50

628 V-N ALONG W. TOE

629 MIN POTHOLE ON SIDE SLOPE V-N
3.6x20x5

630 EROSION ON S. SLOPE 1.5x20x5↓
V-E

631 V-S @ EROSION ⊥ SLOPE (ALONG TOE)
8mx15x10↓

632 V-NE @ SW CRNR

633 MIN DEPR AT CREST 50x30x3↓ V-SE

634 V-NW/NE @ SE CRNR, PAN NE-NW

635 V-SW EROSION ALONG CREST → ↓
PARABOLIC SHAPE, 3.5L, 10W, 2-5↓

636 V-SW/N @ E SIDE.

637 MIN POTHOLE ON SLOPE 30x20x5↓

638 N-W E SIDE. V-S

639 V-SSW/NE @ NE CRNR

640 POTHOLE, V-SE 50x40x5↓

LEVEL

641 V-SW @ MIN DEPRESSION ON COVER
30x30x10↓ ADJ TO MWR
642 " " V-SE 30x20x2↓
643 " LIN DEPR 1m x 20 x 3↓ (N-S)
V-SW

TIER II DISPOSAL FACILITY

001 MW-4 SWL - 64-11
▽ dry bott. 2.06
003 MW-5 SWL : 75 heaved cover 86
▽ 1.15 bott 1.77
004 MW-6 SWL - 79-18
▽ 1.23 bott 1.26
INSUFF ▽
005 MW-7 SWL 08-17
▽ 132 bott 189

USAF LANDFILL

6 MW-12 (MISSING LOCK) SWL - 40 (48-8)
▽ dry (froz) bott - 131

7 PAN SW-E @ N END

8, 9, 10 - V-SE @ NW SLOPE
track PAN SSE-N FROM RD (5)
11 PAN SE-N FROM W CRNR
12 V-NE @ S. SLOPE
13, 14 V-NE @ " "
15, 16, 17 V NNE " "
18 PAN NE-W @ SE END.
19 V - NW (MW-14)
20 V-NW (EROSION OFF END).
21 V-WSW
22 V-SW @ N SLOPE
23, 24, 25, 26 "
27 V-SE ALONG TOE
28 PAN SW-SE FROM RD.
29 - START OF MOSTLY INFILLED CRACK EXT ALONG TOE; V-SE 19m L, 2-4cm W.
30 V-NW AT END, CLOSE UP IN PMOD
2

C314-12W A/B 4m. NE 0-10
BRN SAND, MED GR, DAMP / 40-50

C314-13W A/(B) (BDS) ✓ 3.8mS
GRY/BRN SAND W GRAV: WET @ 35.

30 MW-13 SLUP 52-14
▽ 0.68 bott 1.64
PURGE 1.5L TURB 114

31 MW-14 SLUP 65-15=50
▽ 0.83 bott 1.64

C3 4-14W A/B 1.4m NW
0-dk brn sand, tr org+gravel 0-10
15 Lt brn silty sand, some grav. 40-50
tmp

32 PBURIED 2x4 WOOD ON SIDE SLOPE
V- 90x10

RETRIEVE DATALOGGERS FROM VT-1, 2, 3, 4

33 MW-15 SLUP - 64-3
▽ 0.65 bott 1.63

B3 4-15W A/B 2m S.
0-dk brn/blk org + sand 0-10
15- grey sand, some gravel ▽ 0.28 40-50

34 PAN E-SW. ACROSS COVER FROM RD.

35 VT-1 V- SE

36 MINOR DEPR ON COVER W OF VT-1
V-NE (4x1x15↓ 2 AREAS 37 V-SE
2013 TOPO: 1.5x50x5↓

38 START OF CRACK ON SLOPE V-SE
1-2cm W /// cracks @ 1m up, 3m up, 4m UP (INFILLED). 10m L. → 39 V-NE

40 START OF CRACK, V-SE, 4m UP.
4m L., 1cm W. 41 - V-NW

42 - VT-2. V-ESE

43 V-SE ALONG CREST

44 V-N/S AT MIN EROSION ON LOWER SLOPE. 8m x 20 x 5↓ 44.

45 V- ESE AT VEG / DEPR. AT TOE OF SLOPE
6m 2m 20↓ NO BOWING, SETTLEMENT. → 47 V-W

46 MOSTLY INFILLED CRACK // V-ESE 5m up
5.5m up 1-2m L, 1cm W.

48 V- WNW @ INFILLED CRACK - 8m L!

49 V- SSW @ MIN EROSION TO TOE. SUBTLE
1-2↓ LOW

LEVEL

(60)

NWS LANDFILL

50 - CB14-19 A/B -
LT BRN SAND, MED GR TR GRAVEL
0-10 40-50 V-SE

51 V-SE ALONG E COVER

52 V-S @ N SIDE

53, 54, 55 V-SW @ NE SIDE

56 - CB14-20 A/B V-W
BRN SAND, SOME GRAVEL 0-10 40-50

57 V-NW-E SE END

58 CB14-21 A/B V-N.
BRN SAND, SOME GRAVEL, DRY.

59 V-NE

60 MIN EROSION ON SLOPE 3mL,
20W x 5↓ V-NE/SW.

61 DEPRC CREST 60x20x5↓ V-SW

62/63 V-NE @ S SIDE

64 BM-6.

USAF (CON'T)

65 - V-SE AT TOE - MIN EROSION → 66
30-50W, 1-5↓ V-NW

67 PONDED WATER @ TOE V-SE
H. EQUIP TRACK UPSLOPE - SAME

68 BACT SHEEN ON E @ TOE, V-SE

(61)

69 BACT. SHEEN V-NW ISE

70. IRON STAINING @ TOE V-SE 3mx0.3.
BACT SHEEN ALL ALONG N-TOE.

71 VT-3 V-E

72, TMP VEG ON COVER

73 VT-4 V-W

74 MIN DEPR NEAR TOE 30x15x5, V/SE SW

76 PAN NW-S. ALSO MIN EROSION
x2 - CREST-TOE 10-15W, 1-3↓, V-E/W

78 DEPR. ON MID SLOPE, 50x50x7↓
V-NW., MIN EROSION DOWNSLOPE
TO TOE 8m, 10-30, 1-2↓

79 EROSION ON SE END. TOP-TOE, V-NW/SE
30-1mW, 5↓ WASH FINES - deposit top

81 DEPRESSION 5 OF ↑ W EROSION OF FINES
DOWNSLOPE 1.5x1x5↓ +2 eros downslope
V-E → 82 Backhoe V-W

83 DEPR MID SLOPE 30x40x5↓ V-W/N

84 MIN DEPR. 3m up. 30x20x5↓ V-E.
NO CRACKS OBS ON S END

85 PAN SE-N.

LEVEL

TIER II DF

86 VT-6 V-E
87 VT-5 V-S
88 VT-7 V-W
89 VT-8 V-N

C314-4W A/B 2m N
LT BRN GRAV, SOME SAND, DAMP
0-10 40-50 V-S

C314-5W A/B (BD3) ✓
LT TAN BRN SILT, TR GRAVEL, DAMP
0-10 40-50

C314-6W A/B 22 NE
6 - DK BRN ORG + SILT
10 - LT BRN / BRN SAND, TR S+G
0-10 40-50

C314-7W A/B 2.5m E
0 - LT TAN BRN SILT, DRY-DAMP
TR GRAV 0-10 40-50
/1800

7hrs

DOWNLOAD DATALOGGERS - USAF / TIER II
REPLACE BATTERIES

AUGUST 23, 2014, 3°C OVERCAST
w/ FOG, 30km/h NW
PM - CLEAR, CALM - LT RAIN 7-8°C

NORTHEAST LANDFILL

LOBE A

90 PAN E-NW FROM GRAVEL PILE
91 V - ENE / WSW - TYPICAL ON S END OF LOBE A
92 V. NNE / SW
93 DEPR ON SLOPE 35x1m x 15↓ V-SSW
94 " "CRNR 30x50x10↓ V-SSW
95 " COVER 1m x 0.8 x 10 V-SSW
96 V - NW / S @ NE CRNR
97 DEPR ON COVER w/ EROSION DOWN SLOPE
V-N/S 60x60x10 + 2m L x 15 x 5↓
98 V-E/S @ NW CRNR, V-SE @ DEPR ON CRNR
1m x 40 x 10↓, w/ MIN. EROSION, V-NE
99-104 V-E/W @ TYP EROSION ON SLOPE (@103)
3m L x 20-30 x 5-10↓ TOP-TOE
105 V-S-NE ACROSS COVER, SP. VEG

LEVEL

LOBE B

106 PAN. NW-S & NTGRNC, V-NW/S

107 FEATURE V-W./N. SAME

108 EROS. ON E SIDE 2mL, 10-20×5↓ V-E/W

110/109 PAN E-NW FROM MOUND

111 PAN. SE-N. FROM SW CRNR

112 V-SE INFILLED CRACK 8mL 1-2cm W.
SAME LOC. @ CREST, CLOSE UP
V-E/W EROSION TOP TOE 4m×30-50×2-5↓

113 LIN. DEPR. (N-S) 4m×40×10↓ V-E/W

114/115 MIN EROS OF FINES ON SLOPE
TOP-TOE (4m, 50-1m, 1-2↓) V-E

116 C314-13 A/B V-N. 0-16
LT BRN SAND, SOME GRAV. DAMP 40-50

117 V-SE @ OLD DRAINAGE CH - DRY

118 MIN EROSION SLOPE V-E, FINES, 4m×20-30×1-3↓

119 V-E

120 V-SE/@ MIN EROSION 5mL, 2↓-3↓ 2-5↓
NW x2 (SAME)

121 V-E ALONG N SIDE

122 MIN EROS. ON N-SIDE SLOPE V-S
4m×20×2↓

123 PAN S-E.

124 LT BRN SANDY SILT, SOME GRAVEL TRACE CLAY 0-10
C314-14 A/B. V-E

LOBE C

123 V-NNE

125 V-NNW-C SE CRNR 12 SMALL LIN DEPR // TO SLOPE dir (SAME)

126 V-S @ POTHOLES ON SLOPE
30×40×10↓ + 30×20×10

127 @ ON SW CRNR V-NNE, 8mL
V-SW, 5-10↓

128 POTHOLE ON CRNR ADJACENT 30×20×15↓
V-SW
V-NE INFILLED CRACK ~10mL, 3cm W

129 2nd crack V-N. ACROSS/45° TO SLOPE
3mL 3mm W.

130 V-N

131 V-NE INFILLED CRACK, 4mL, 3-5mm W

132 2 POTHOLES @ CREST 50×50×10↓
30×30×15

133 START OF MINOR CRACK ON CREST, EXT 134
THROUGH POTHOLES, 18m V-S END
2-5mm

135 V-S @ DEPR. ON SLOPE (SAME) BELOW
POTHOLES 10↓, 2m W. 50mL

136 C314-15 A/(B) BD6 ✓
0 - GRAY SILT C-10
20 LT TAN BRN SILT, TR STG 40-50

LEVEL

137 MIN EROS ON SLOPE 3m, 30-50x 5↓
V-E/W

138 POTHOLE 30x20x10↓ V-S
139 V-NE START OF P INFILLED CRAK
CREST 3-5mm, 17m→140
141 POTHOLE ON MID SLOPE 40x30x5↓
V-N

142 NO STAINING V-ESE
143 POTHOLE 30x50x5↓ + INFILLED
CRACK 2mL 1cmW. V-W
V-NW @ PONDED ▽ ADJ TOE.
144 // CRACKS BELOW 143. CUTTING
ACROSS CORNER 30cm APART V-SW
5mmW. 2-3mL, P INFILLED.
144 V-W/S @ NE CRNR, PAN W-NE
145 DISTURBED/GRADED AREA (H-EQUIP)
FROM NW CRNR.

146 C314-16 A/B. V-E, NEAR CH.
0-LT BRN SILT, W/S+G. DAMP 0-10
40-50

LOBE G
147 V-E AT DRCH ▽
148 V-NNW / ESE @ CRNR, REPAIRED
149. MIN EROSION 3m/15x5 AREA
V-N

150 CAVING (HOLES IN COVER) 9↓
V-N/E, ▽ @ TOE 2.5m S.
152 V-NW @ REGRADED AREA - V. SANDY SOIL
PONDED ▽ @ TOE, NO CRACKS
SEE TRACK FOR PERIM.

153 V-SE @ MIN EROS @ EDGE OF
REGRADE 2m, 15Wx10↓
154 ORG MATL ON COVER; NW CRNR
OF REGRADE, PAN SW-E 155 SW CRNR

156 2 AREAS OF SCOURING. 2-3mL 10-15↓
V-S

157 V. E ALONG SIDE, PAN S NE
158 LRG CRACK ON SIDE SLOPE: 5-10cmW
6mL. ALSO ▽ @ TOE, MIN ORANGE
STAIN IN ▽ 2mx0.7 STAINING IN W.
▽ ONLY.

159 V-W/N. INSIDE CRNR
STAINING @ ▽ edge/toe 15x0.6m.
160 V-N @ START OF CRACK, 18m - 161
2-3 // @ CREST V-S upto 2cm W.
162 MIN EROS. 5mx20x2-3↓ V-E/W
163 INFILLED CRACK 4mL, 2-3cm W
V-NW/SE, CRACK EXT 5m
ONTO TUNDRA

LEVEL

164 C314-17 A/B V-E
BLK ORG, TR STG 0-10
40-50

165 START OF CRACK @ CREST V-N
5m, INFILLED

166 RESTART 8m V-S, dips to too
2-1/ UP TO 1Cm W

167 V-S, UNW @ FORMER DR CH
~~168~~ SETTLEMENT/ERO. /45 TO SLOPE V-S/N
4m, 15 x 10↓ TOWARDS CH (K)

168 POTHOLE 30x40x10↓ V-N

169 V-S/W @ CRNR

170 PAN S-NE

LOBE H

171 V-N/W @ SE CRNR

172 MIN EROS. ON SLOPE V-N/E
2 x 1m x 2↓, + Sm. DEPRESSIONS (SAME)

173 V-S @ NE CRNR.

174 LIN. DEP. 4 2/m L, 20 SW, 10↓ V-E/S

175 POTHOLE ADJ BLDR 20x30x10↓ V-S

176 V-S ALONG W SIDE.

177 L-W @ 4m x 10 x 2-3↓ EROSION

178 V-NE

179 C314-18 A/B 0-10 40-50
DK BRN SAND + GRAVEL, W/ROCK

LOBE G (CONT)

179 V-W/S @ NE CNR

180 V-N/S.

181 V-S @ MIN EROSION ON SLOPE
2m x ~~40~~ 2-3↓ FINES

182 V-W @ RUTTS (SAME)

183-184 INFILLED CRACK V-S/N

185 V-S @ " " ON SIDE SLOPE

186 V-N/S @ E SIDE

187 V-N / WSW @ CRNR

188 SM HYD STAIN 25x15

189 C314-9 A/B. V-ENE
0- DK BRN SAND, W/GRAV, TR ORG 0-10 40-50

190 PAN SE-NW @ SE CRNR

191 E END OF EROSION 30-1m W, 2-3↓ FINES
V-W/E → 192 END 0.4-2m W.

193 V-E @ EROSION FINES 2-3↓ FROM SE CNR
STARTS @ POTHOLE (194) V-W.
40x60x5↓

LOBE F

194 C314-10 A/B V-SW 0-10
Grey Sand, med gr - fr. gr, damp 40-50

196 PAN SW-SE @ N END OF LOBE

LEVEL

197 DEPR ON SLOPE 4m x 30 x 10↓ V-S
V-SW/SE
198 V-WNW/S, SE @ FORM. POND AREA
199 PAN S-N LS
200 V- SE/N @ CRNR
~~201~~ V- NE @ REPAIRED AREA
201 V- E/S " "
↳ NOTE: BALUST ALONG TOE; V-E @ NE CRNR
202 V-SE

LOBE E

C31 4-11 (A) B (BD7) ✓ V-N 0-10 40-50
DK BRN SAND, SOME CRST + CBLS.

204 V-S @ DEPR ON CREST 0.5x0.2x3↓
205 LIN DEPR (E-W) 1mx30x5↓
206 V-N-S @ LIN DEPR 8mx15x10↓
207 V-S @ LRG DEPR.
208 PAN W-S → (SAME)
209 V-W/NE @ SE CRNR
210 V-N FROM < END OF SEASONAL ☒ AREA
HIGH ☒ MARK NEAR CREST
211 V-NW
212 LIN DEPR (E-W) V-SW. 2x40x10↓
213 V-SE/N @ INSIDE CRNR

214 MIN EROS @ SLOPE (FINES) 1-2↓
4-5m 2 AREAS (215), V-SE/NW + NW
216 LIN DEPR. 2.5x10x5↓ V-SE
217, 218 DEPR ON COVER 1-2m, 15-25 x 5-10↓
V-SE
219 V-S, NW, 220 V-W
221 V-SSW-NE @ NW CRNR
222 V-S @ DEPR NEAR TOE 30x50x15↓
223 " " 50x40x10↓

LOBE D

224, V-S/W @ NE CRNR
225 DEPR ON TOP CRNR 3x50x5↓ V-W
226 V-W/N @ DEPR ON SIDE SLOPE
30x40x5↓
227 2x LOOSE STAINS, V-S
228 MIN EROS ON SLOPE V-S/N 4x30-1-2
229 PAN W-E
230 V-S FROM NW CRNR TOE
231 2x POTHOLES V-S 30x40x10↓
232 MIN DEPR ON COVER 60x20x5↓ N-S
V-E
233 V-N
235 V-W/S @ SE CRNR
236 2x DEPR ON SLOPE 2m x 25 x 5↓
V-SE

LEVEL

MID DAY · OVERCAST · 6°C · 10-15 km/h NW

237 C314-12 A/B V-W 0-10
BRN SAND + GRAVEL, DRY. 40-50

BEACH LANDFILL · AP+BEN. JH-3

238 V · W @ E CRNR
239 V - SW/NW @ DR. CH., PAN. N-SW.
240 SUBTLE DEPR ON CREST V·SE
4m x 50 x 5↓
241 PAN SW-SE, DR. CH TO BOTT. LEFT
V-SE
242 V · SW ALONG NW FACE.
243 2 POTHOLES @ CREST V-SW/NE
60x50x1, 30x30x5↓
244 PAN E-SW.
245 MIDDLE OF LRG DEPR. V-N/SE
246 PAN SE-N., MIN DRAINAGE
ALONG S-SIDE.
247 V-SE @ DRAINAGE
248 START OF DRAINAGE. V-NW.

249 C314-2 (A) B (BD2) ✓ V-E
BRN SAND W/ CBLS/GRAV + BLDRS.
0-10 40-50.
250 V- NW/SE ALONG S SLOPE

251 MIN. EROSION OF FINES
2.5 x 30, 2-3↓ V-NE/SW
252 V-W/NE, PAN-NE-W.
253 IN DR CH. V-W/E MIN. EROS.
254 PAN E-NW @ S-SLOPE.
255 LIN DEPR 4T TO SLOPE 2m x 20 x 5↓
V-S
256 V-SW @ SUBTLE DEPR 30x60x5↓
257 LIN DEPR V-S 1x20x5↓
258 V-SE/NW @ EROSION · 15w, 2-5↓ 15m
259 C314-1 A/B. V-NW.
Grey Sand, W/ Gravel, dump 0-10 40-50
260 C314-3 A/B V-SE
BRN/GREY SAND, SOME GRAV. De 30

TIER II DE-WATER SAMPLING

MW-5
T 2.6/2.1 COND - 4.53/4.13/3.68
PH 7.4/7.6/7.5 C+C ms TURB ~ 68.
COLLECT 4x40, 2x1L, 1x250DL
PURGE 800 mL

MW-7
T 2.3/1.8 COND 2.20/1.827/2.71
PH 7.6/7.6/7.8 ms
PURGE 750 mL
COLLECT ALL TURB - 46 LEVEL

USAF LANDFILL

MW-13
T 2.2/2.1/2.1 COND 3.21/3.03/2.94
PH 7.5/7.7/7.8 MS PURGE 15L
COLLECT ALL C+C
TURB 134

MW-14
T 2.2/2.0/2.1 COND 2.05/1.832/1.929
PH 7.7/7.8/7.8 MS PURGE 12L
COLLECT ALL. C+C, SLIGHT BSN
TURB 96

MW-15 (BOWL)
T=3.1/2.5/1.5 COND. 2.37/2.36/2.81
PH 7.7/7.7/7.6 MS PURGE 14L
COLLECT 9x40, 3x40Hg, 6x1L,
3x250mL TURB. 64.

REINSTALL DATALOGGERS @
- USAF ✓
- TIER II ✓

MANUAL READINGS ✓

AUGUST 24, 2014 ~ 8C, P. SUNNY.
30 KM/H SW.

261 BM NEAR ROAD NW OF DF
262 V-SE @ NW CRNR
263-65 V-E @ W SLOPE
266 V-NE @ SW CRNR
267-69 V-N @ S SLOPE
270 V-NW @ SE CRNR
271-73 V-W @ E SLOPE
274 V-SW @ NE CRNR
275-77 V-S @ N SLOPE
278 V-E @ MINOR WATERPONDED 2m N of 279
279 V-E/S @ NW TOE.
LOTS OF CARIBOU TRACKS ON LF.
280 BOTTOM OF EROSION - TOP-TOE V-E/W
30-50W, 5↓ (FINES) ↳ 281
282 SW CRNR: V-N/E, PAN SE-N.
283 MIN EROSION @ CREST 1.5m SE OF VT-8.
V-S/N. 30x TOP-TOE 50L x 2-5↓
VEGETATION S SLOPE.
284 V-N @ DEPR. BELOW VT 8. 30x50x10
285 V-N @ " " 40x20x5↓ BOTH (EW)
286 V-S @ // CRACKS PARTIALLY FILLED EXT.
ALONG SLOPE 7.8m UP.
287 CLOSE UP, 25cm ↓ UP TO 6cm W.
288 V-N @ OTHER END LEVEL

289 V-NIE R.SW. CRNR, V-NE @ 2 CRACKS
EXT UP CRNR SLOPE // 40cm APART
P.ART. INFILLED; UPTO 2cm W., 3.4m L.
UPTO CRACKS EXT. ALONG S SLOPE.

290 DEPR ON SW CRNR V-E. 1m x 70x 10↓

291 V-E @ START OF // CRACKS @ 5-7m UP
SETTLEMENT ON SLOPE.

292 V-E AT CRACK @ 3-4m UP

294 CLOSE UP 7cm W. 15cm↓ V-E

295 W. END OF 1ST DEPR. @ TOE: V-E

296 CRACKS @ 5m UP; V-W. 10cm W/ 65cm↓

297 UPPER CRACK - N&S UP. STARTS + EXT
E.: V-E.

298 MOVEMENT ON SLOPE V-E/W 20-30↓

299 E END OF TOP CRACKS

300 PARABOLIC CRACK, SMALLER 2-3mm @ 2m UP -4m
AROUND DEPR TOE.

301 V-W ALONG TOE

302 // UPPER CRACKS STARTING TO E AGAIN
V-E 5-6 UP DIPPING TO CRNR
UP TO 40↓

303 - V-W @ E END OF CRACKS

304 - V-W/N @ SE CRNR, 4 CRACKS
EXT UP SLOPE + TURNING N.
2-3mm. then widening to N @ 3.5 UP
to 4.5cm

305 - V-NW. P. infilled.

306 END OF CRACK 305.

307 .5m DEPR ON ENR SLOPE
15 x 30 x 5↓ V-E

308 " " 30 x 50 x 10↓ V-NW

309 V-W/N PAN NE-W @ SE CNRS
ALSO EROS ALONG CREST 3m L, 15x5↓
V-E

310 5m DEPR CREST 30x50x5↓ V-E

311 TOP OF EROSION - TOP - TOE;
30-50W, 2-5↓ V-S

312 V-S/W @ NE CRNR. .5M DEPR
40 x 20 x 5↓ V-E

313 DEPR ON COVER. 46x30x10↓ V-W

314 V-E/S @ NW CRNR, PAN SW-E

315 V-N @ W DEPR ON CREST
5.6m W, 4m L x 5↓

316 V-S @ DEPR @ TOE 60x30x(N-S) 10↓

317 V-NE " MID SLOPE SAME. 5↓

LEVEL

Exova — Testing, calibrating, advising

www.exova.com

ED 120-02

Project Information

Project ID: CAM-3 2014
Project Name: 2014 LFM
Project Location: SHEPERD BAY
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote # 14-071-30663

Invoice to:

Company: SILA REMEDIATION
Address: 1260 Boul Lebourgneuf Québec, QC
Attention: J.P. PELLETIER
Phone: 418-626-1688 Ext 5812
Cell:
Fax:
E-mail: jean-pierre.pelletier@vm.ca
Agreement ID:
Copy of report:

Report To:

Company: SAME
Address:
Attention:
Phone:
Cell:
Fax:
E-mail 1: andrew.passalis@gmail.com
E-mail 2:
Copy of invoice:

Report Results		Regulatory Requirement	
E-Mail	X	HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF	X	Other (list below)	
Excel	X		
QA/QC	X		

Sample Custody (please print)

Sampled by: A. PASSALIS
Company: SILA.

This section for Lab use only

Date/Time stamp: AUG 28 PM 12:24

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: Signature:

Special Instructions/Comments (please include contact information including ph. # if different from above).

	Site I.D.	Sample Description	Depth start in	Depth start cm	Depth end m	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals (see Quote)	PCB's	TPH (F1-F3)								Indicate in the space allotted any deficiencies by the corresponding number.
1		C314-1A				23/8/14	SOIL		2	X	X	X								
2		-1B								X	X	X								
3		-2A								X	X	X								
4		-2B								X	X	X								
5		-3A								X	X	X								
6		-3B								X	X	X								
7		-4A				22/8/14				X	X	X								
8		-4B								X	X	X								
9		-5A								X	X	X								
10		-5B								X	X	X								
11		-6A								X	X	X								
12		-6B								X	X	X								
13		-7A								X	X	X								
14		-7B								X	X	X								
15		-8A								X	X	X								

1. Indicate any samples that were not packaged well
2. Indicate any samples not received in Exova supplies
3. Indicate any samples that were not clearly labeled
4. Indicate any samples not received within the required hold time or temp.
5. Indicate any missing or extra samples
6. Indicate any samples that were received broken
7. Indicate any samples where sufficient volume was not received
8. Indicate any samples received in an inappropriate container

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Please indicate any potentially hazardous samples

Indicate lot # or affix barcode here: 1023068

Shipping: COD Y/ N
and size of coolers
Temp. received: 4.6
Delivery Method:
Waybill:
Received by: J NUNEZ

Page 1 of 6 Control # C 0042757

ED 120-02

Exova — Testing, calibrating, advising

www.exova.com

ED 120-02

Project Information

Project ID:

Project Name:

Project Location:

Legal Location:

PO/AFE#:

Proj. Acct. Code:

Quote #

Invoice to:

Company:

Address:

Attention:

Phone:

Cell:

Fax:

E-mail:

Agreement ID:

Copy of report:

Report To:

Company:

Address:

Attention:

Phone:

Cell:

Fax:

E-mail 1:

E-mail 2:

Copy of invoice:

Report Results		Regulatory Requirement	
E-Mail		HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF		Other (list below)	
Excel			
QA/QC			

Sample Custody (please print)

Sampled by:

Company:

This section for Lab use only

Date/Time stamp:

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: _____ Signature: _____

Special Instructions/Comments (please include contact information including ph. # if different from above).

	Site I.D.	Sample Description	Depth start in	Depth start cm	Depth end m	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals	PCBs	TPH (F1-F3)								Indicate in the space allotted any deficiencies by the corresponding number.
									↓	Enter tests above (√ relevant samples below)										
1		C314-8B				22/8/14	SOIL		2	X	X	X								1. Indicate any samples that were not packaged well
2		-9A				23/8/14				X	X	X								
3		-9B								X	X	X								2. Indicate any samples not received in Exova supplies
4		-10A								X	X	X								
5		-10B								X	X	X								3. Indicate any samples that were not clearly labeled
6		-11A								X	X	X								
7		-11B								X	X	X								4. Indicate any samples not received within the required hold time or temp.
8		-12A								X	X	X								
9		-12B								X	X	X								5. Indicate any missing or extra samples
10		-13A								X	X	X								
11		-13B								X	X	X								6. Indicate any samples that were received broken
12		-14A								X	X	X								
13		-14B								X	X	X								7. Indicate any samples where sufficient volume was not received
14		-15A								X	X	X								
15		-15B								X	X	X								8. Indicate any samples received in an inappropriate container

ED 120-02

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Indicate lot # or affix barcode here

Shipping: COD Y/ N

and size of coolers

Temp. received:

Delivery Method:

Waybill:

Received by:

Please indicate any potentially hazardous samples

Page 2 of 6

Control # C0042758

Exova Testing, calibrating, advising

www.exova.com ED 120-02

Project Information	Invoice to:	Report To:	Report Results	Regulatory Requirement
Project ID:	Company:	Company:	E-Mail	HCDWQG
Project Name:	Address:	Address:	Mail	Ab Tier 1
Project Location:	Attention:	Attention:	Online	SPIGEC
Legal Location:	Phone:	Phone:	Fax	BCCSR
PO/AFE#:	Cell:	Cell:	PDF	Other (list below)
Proj. Acct. Code:	Fax:	Fax:	Excel	
Quote #	E-mail:	E-mail 1:	QA/QC	
	Agreement ID:	E-mail 2:		
	Copy of report:	Copy of invoice:		

Sample Custody (please print)

Sampled by:

Company:

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: ______ Signature: [signature]

Special Instructions/Comments (please include contact information including ph. # if different from above).

This section for Lab use only

Date/Time stamp:

Enter tests above (√ relevant samples below)

	Site I.D.	Sample Description	Depth start	Depth end (in cm m)	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals	PCBs	TPH(F1-F3)
1		C314 -16A			23/8/14	SOIL		2	X	X	X
2		-16B							X	X	X
3		-17A							X	X	X
4		-17B							X	X	X
5		-18A							X	X	X
6		-18B							X	X	X
7		-19A			22/8/14				X	X	X
8		-19B							X	X	X
9		-20A							X	X	X
10		-20B							X	X	X
11		-21A							X	X	X
12		-21B							X	X	X
13		-1WA							X	X	X
14		-1WB							X	X	X
15		-2WA							X	X	X

Indicate in the space allotted any deficiencies by the corresponding number.

1. Indicate any samples that were not packaged well
2. Indicate any samples not received in Exova supplies
3. Indicate any samples that were not clearly labeled
4. Indicate any samples not received within the required hold time or temp.
5. Indicate any missing or extra samples
6. Indicate any samples that were received broken
7. Indicate any samples where sufficient volume was not received
8. Indicate any samples received in an inappropriate container

Please indicate any potentially hazardous samples

Indicate lot # or affix barcode here

Shipping: COD Y/ N

and size of coolers

Temp. received: Delivery Method:

Waybill:

Received by:

Page 3 of 6 Control # C 0042759

Exova Testing, calibrating, advising

www.exova.com ED 120-02

Project Information

Project ID:
Project Name:
Project Location:
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote #

Invoice to:

Company:
Address:
Attention:
Phone:
Cell:
Fax:
E-mail:
Agreement ID:
Copy of report:

Report To:

Company:
Address:
Attention:
Phone:
Cell:
Fax:
E-mail 1:
E-mail 2:
Copy of invoice:

Report Results		Regulatory Requirement	
E-Mail		HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF		Other (list below)	
Excel			
QA/QC			

Sample Custody (please print)

Sampled by:
Company:

This section for Lab use only

Date/Time stamp:

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: Signature:

Special Instructions/Comments (please include contact information including ph. # if different from above).

	Site I.D.	Sample Description	Depth start in	Depth start cm	Depth end in	Depth end cm	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals	PCBs	TPH (F1-F3)								Enter tests above (√ relevant samples below)
1		C31+-2WB					22/5/14	Soil		2	X	X	X								
2		-3WA								1	X	X	X								
3		-3WB									X	X	X								
4		-4WA									X	X	X								
5		-4WB									X	X	X								
6		-5WA									X	X	X								
7		-5WB									X	X	X								
8		-6WA									X	X	X								
9		-6WB									X	X	X								
10		-7WA									X	X	X								
11		-7WB									X	X	X								
12		-12WA									X	X	X								
13		-12WB									X	X	X								
14		-13WA									X	X	X								
15		-13WB									X	X	X								

Indicate in the space allotted any deficiencies by the corresponding number.

1. Indicate any samples that were not packaged well
2. Indicate any samples not received in Exova supplies
3. Indicate any samples that were not clearly labeled
4. Indicate any samples not received within the required hold time or temp.
5. Indicate any missing or extra samples
6. Indicate any samples that were received broken
7. Indicate any samples where sufficient volume was not received
8. Indicate any samples received in an inappropriate container

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Indicate lot # or affix barcode here

Shipping: COD Y/ N
and size of coolers
Temp. received:
Delivery Method:
Waybill:
Received by:

Please indicate any potentially hazardous samples

Page 4 of 6 Control # C 0042760

ED 120-02

Exova Testing, calibrating, advising

www.exova.com ED 120-02

Project Information	
Project ID:	
Project Name:	
Project Location:	
Legal Location:	
PO/AFE#:	
Proj. Acct. Code:	
Quote #	

Invoice to:	
Company:	
Address:	
Attention:	
Phone:	
Cell:	
Fax:	
E-mail:	
Agreement ID:	
Copy of report:	

Report To:	
Company:	
Address:	
Attention:	
Phone:	
Cell:	
Fax:	
E-mail 1:	
E-mail 2:	
Copy of invoice:	

Report Results		Regulatory Requirement	
E-Mail		HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF		Other (list below)	
Excel			
QA/QC			

Sample Custody (please print)

Sampled by:

Company:

This section for Lab use only

Date/Time stamp:

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: ____________ Signature: [signature]

Special Instructions/Comments (please include contact information including ph. # if different from above).

#	Site I.D.	Sample Description	Depth start	Depth end	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals	PCBs	TPH (F1-F3)		Ti Metals (see quote)
1		C314-14WA			22/9/14	SOIL		2	X	X	X		
2		-14WB							X	X	X		
3		-15WA							X	X	X		
4		-15WB							X	X	X		
5		-BD1			23/8/14				X	X	X		
6		-BD2			22/8/14				X	X	X		
7		-BD3							X	X	X		
8		-BD4							X	X	X		
9		-BD5							X	X	X		
10		-BDC			23/8/14				X	X	X		
11		-BC-7							X	X	X		
12		C314-5W			23/8/14	WATER		7		X	X		X
13		-7W								X	X		X
14		-13W								X	X		X
15		-14W								X	X		X

Indicate in the space allotted any deficiencies by the corresponding number.

1. Indicate any samples that were not packaged well
2. Indicate any samples not received in Exova supplies
3. Indicate any samples that were not clearly labeled
4. Indicate any samples not received within the required hold time or temp.
5. Indicate any missing or extra samples
6. Indicate any samples that were received broken
7. Indicate any samples where sufficient volume was not received
8. Indicate any samples received in an inappropriate container

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Please indicate any potentially hazardous samples

Page 5 of 6 Control # C 0042761

Indicate lot # or affix barcode here

Shipping: COD Y/ N

and size of coolers

Temp. received: | Delivery Method:

Waybill:

Received by:

ED 120-02

Exova — Testing, calibrating, advising

www.exova.com ED 120-02

Project Information

Project ID:
Project Name:
Project Location:
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote #

Invoice to:

Company:
Address:
Attention:
Phone:
Cell:
Fax:
E-mail:
Agreement ID:
Copy of report:

Report To:

Company:
Address:
Attention:
Phone:
Cell:
Fax:
E-mail 1:
E-mail 2:
Copy of invoice:

Report Results		Regulatory Requirement	
E-Mail		HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF		Other (list below)	
Excel			
QA/QC			

Sample Custody (please print)

Sampled by:
Company:

This section for Lab use only

Date/Time stamp:

RUSH Priority

- Emergency (contact lab for turnaround and pricing)
- Priority 1-2 working days (100% surcharge)
- Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required: Signature:

Special Instructions/Comments (please include contact information including ph. # if different from above).

	Site I.D.	Sample Description	Depth start in	Depth start cm	Depth end m	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	T. Metals.	PCBs	TPH (F1-F3)										Indicate in the space allotted any deficiencies by the corresponding number.
									↓	Enter tests above (√ relevant samples below)												
1		C314-15W				23/9/14	WATER		7	X	X	X										1. Indicate any samples that were not packaged well
2		-BDWI							1	X	X	X										
3		-FB							1	X	X	X										2. Indicate any samples not received in Exova supplies
4																						
5		C314/C514-TB (TRIP BLANK) 2914					"		7	X	X	X										3. Indicate any samples that were not clearly labeled
6																						
7																						4. Indicate any samples not received within the required hold time or temp.
8																						
9																						5. Indicate any missing or extra samples
10																						
11																						6. Indicate any samples that were received broken
12																						
13																						7. Indicate any samples where sufficient volume was not received
14																						
15																						8. Indicate any samples received in an inappropriate container

ED 120-02

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Indicate lot # or affix barcode here

Shipping: COD Y/ N

and size of coolers

Temp. received:

Delivery Method:

Waybill:

Received by:

Please indicate any potentially hazardous samples

Page 6 of 6 Control # C0042762

Maxxam

Calgary: 4000 19st St. NE, T2E 6P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
www.maxxamanalytics.com

Chain of Custody

A159155

Page: 1 of 1

	Invoice To: C/O Report Address ☐	Report To: Same as Invoice ☒
Company:	SILA REMEDIATION	
Contact:	J.P. PELETTIER	
Address:	1260 BOUL LEBOURGNEUF	
	Prov: QUEBEC, QC PC:	Prov: PC:
Contact #s:	Ph: 418-626-1688 Cell: EXT 5892	Ph: Cell:

Report Distribution (E-Mail):
jean-pierre.pelletier@lvm.ca
andrew.passalis@gmail.com

REGULATORY GUIDELINES:
- ☐ AT1
- ☐ CCME
- ☐ Regulated Drinking Water
- ☒ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	
Project # / Name:	CAM-3 / CAM-5 LFM
Site Location:	Shepherd Bay / Mackar Inlet
Quote #:	B30371
Sampled By:	A. PASSALIS

SERVICE REQUESTED:
- ☐ RUSH (Contact lab to reserve) Date Required: _____
- ☒ REGULAR (5 to 7 Days)

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: ~~BTEX F1-F4~~ F1-F3	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals (See LIST)	Basic Class II Landfill	PCBs	WATER: ☐ ~~BTEX F1-F3~~ VOCs	☐ BTEX F1-F2	☐ BTEX F1-F4	☐ Routine Water ☐ Turb ☐ F	☐ TOC ☐ DOC	Regulated Metals (CCME / AT1) Total	Regulated Metals (CCME / AT1) Dissolved	Mercury ☐ Total ☐ Dissolved	Other Analysis: PCBs	METALS As, Co, Cu, Cr, Pb, Ni, Zn, Hg ONLY!	HOLD - Do not Analyze	# of Containers Submitted
1	C514-7WB		Soil	14/8/21	X				X		X												2
2	C514-8W.		GW	"	X				X		X	X					X		X	X			7
3	C314-7A		Soil	14/8/22	X				X		X												2
4	C314-2A			14/8/23	X				X		X												2
5	C314-5WB			14/8/22	X				X		X												2
6	C314-2WA			"	X				X		X												2
7	C314-13WB			"	X				X		X												2
8	C314-15B			14/8/23	X				X		X												2
9	C314-11A.			"	X				X		X												2
10	C314-15W		GW	"								X				X			X	X			7
11																							
12																							

Please indicate Filtered, Preserved or Both (F, P, F/P) →

Relinquished By (Signature/Print):	Date (YY/MM/DD): 14/08/25	Time (24:00):
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions: Metals (As, Cr, Co, Cu, Ni, Pb, ~~Mn~~, Zn, Hg)

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:	Maxxam Job #:		
			Custody Seal	Temperature	Ice
Lab Comments:					