THE COLLECTION OF LANDFILL MONITORING DATA AT THE FORMER CAM-5 DEW LINE SITE

Mackar Inlet, Nunavut

FINAL REPORT – 2014

(O/Ref.: CD2655) (Y/Ref.: DLCMON (QIKIQ12))

DEFENCE CONSTRUCTION CANADA

JUNE 2015

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DEFENCE CONSTRUCTION CANADA

JUNE 2015

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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 Distance 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: Terms of Reference (TOR) – Services for the Collection of Landfill Monitoring Data, CAM-5 Mackar Inlet, FOX-M Hall Beach, FOX-2 Longstaff Bluff and FOX-3 Dewar Lakes DEW Line Sites, Nunavut Territory, Qikiqtaaluk Region DCC Project #: DLCMON(QIKIQ12), March 20, 2012. This report contains a summary of the findings from the 2014 inspection of the CAM-5 Mackar Inlet site.

Table I below 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-5 Landfills

Landfill	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
Lower Site Landfill - South	✓			
Non-Hazardous Waste Landfill	✓			
USAF & Asbestos Landfill	✓			
Tier II Disposal Facility	✓	✓	✓	✓

1.2 FIELD PROGRAM STAFF AND TIMING

The 2014 on-site field program at CAM-5 Mackar Inlet took place on August 21, 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 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-5 Mackar Inlet monitoring event with daytime temperatures ranging between 4-5ºC. Skies were generally overcast to mostly cloudy and moderate winds ranging between 15-25 km/hr from the northeast throughout the day.

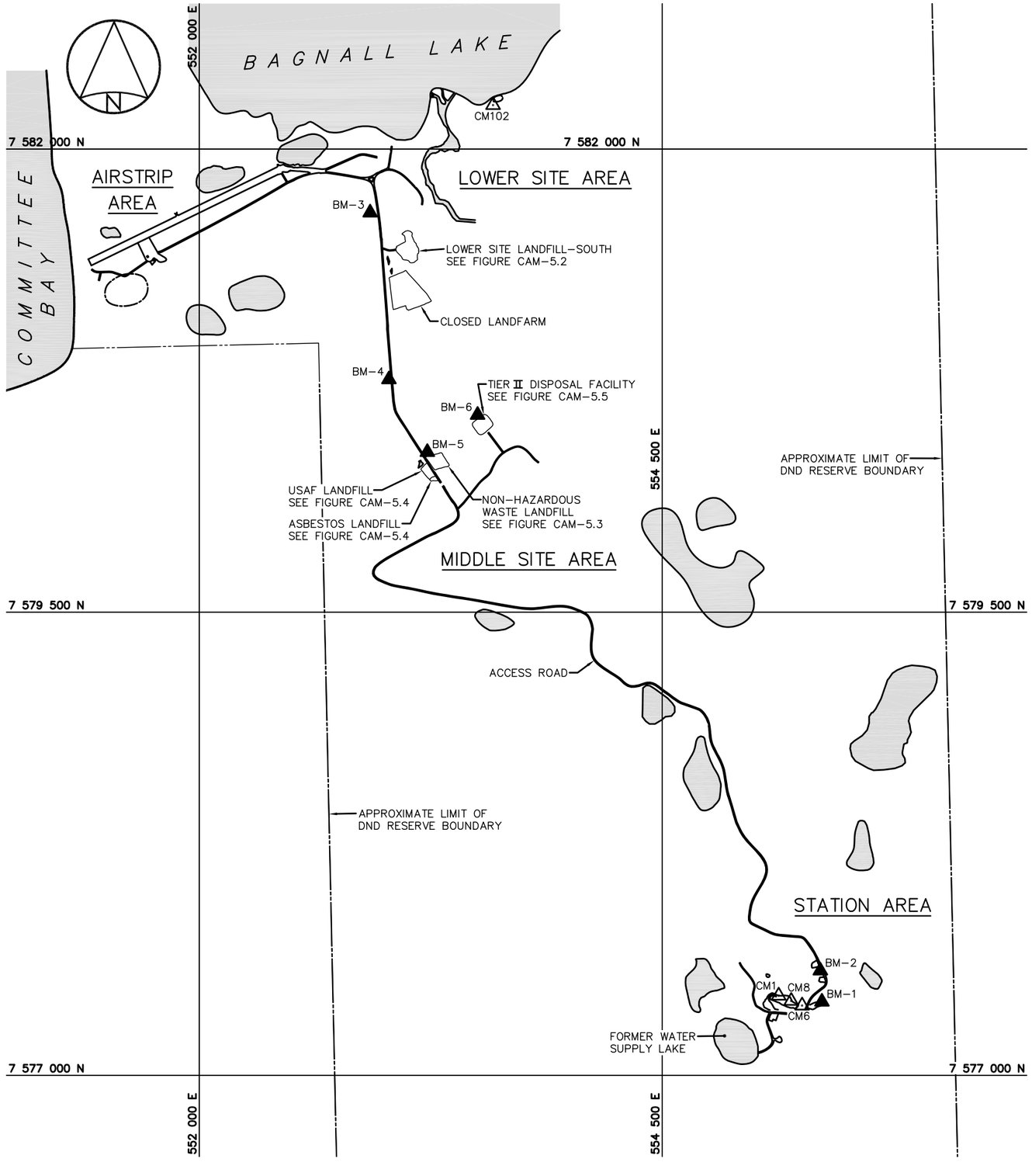
1.4 REPORT FORMAT

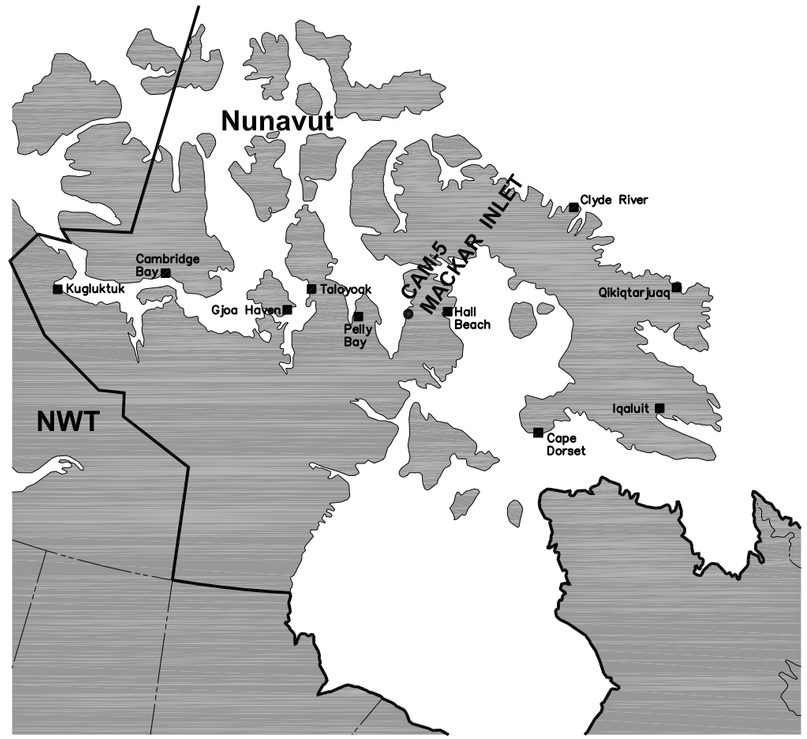
This report describes the work carried out in August 2014 at four landfill sites at CAM-5. Results from soil and groundwater sampling, thermal monitoring and visual inspection of the sites are also presented in the formats described in the TOR (Reference A). An electronic version of the report and its component 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).

An overall site plan (Figure CAM 5.1) presents an overview of the former CAM-5 site with the localization of each landfill areas. For the photographic record, a photographic index has been completed as per the TOR for each of the landfill areas. The full resolution photos are included in electronic format in the Addendum DVD-ROM to this report. Certificates of Analysis, QA/QC analytical results and field notes are attached in the Annexes.





LOCATION OF MACKAR INLET WITHIN NUNAVUT TERRITORY

SCALE: NTS

LEGEND

- CM1 — SURVEY CONTROL MONUMENT
- BM-1 — PERMANENT BENCHMARK LOCATION (6)
- APPROXIMATE LOCATION OF PROPERTY BOUNDARY
- ARCHAEOLOGICAL FEATURE
- BODY OF WATER

0 250m 500m 750m 1,000m 1,250m

NO.	VERSION	DATE	P.L.	A.P.	P.G.
1	FINAL	15-06-26	PAR	VERIF.	APPR.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-5, MACKAR INLET, 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 : 25,000	JUNE 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. Eng
PROJECT NO:	DRAWING NO:	PAGE
CD2655_400_403	CD2655_400_403_101-CAM-5.1	CAM-5.1

FIGURE CAM-5.1

2 METHODOLOGY

2.1 VISUAL INSPECTION

Data and information collected during the visual inspection of the CAM-5 landfills are included in the visual inspection data sheets. These data sheets include such inspection data as the location of settlement, erosion, frost action, sloughing and cracking, animal burrows, vegetation cover and stress, staining, seepage points, exposed debris, and any other features of note.

Each feature was identified with an alphabetical tag to be used consistently each year in an effort to track changes in 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 Nikon D5100 16.2 megapixel (MP) digital camera. Full resolution digital jpg copies are available on the DVD-ROM appended with this report. The photo log, including the local coordinates from where the photo was taken, orientation (relative to map north), feature of note and picture numbers are included with each landfill report.

2.2 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 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).
- CCME EPC-NCS66E Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites - Volume II: Analytical Method Summaries, Dec. 93 (CCME catalogue - http://www.ccme.ca/pdfs/cat_eng.pdf).
- Reference method for the Determination of Petroleum Hydrocarbons in Soil – Tier I Method, 2001.
- CCME Subsurface Assessment Handbook for Contaminated Sites, March 1994, EPC-NCSRP-48E (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, four soil sampling stations were visited. A surface (0-15 cm depth) and subsurface sample (40-50 cm depth below surface) were taken at each sampling station. No frozen ground or frost was encountered at the soil stations during the August 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.
- 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;
- Exova performed PHC Fractions F2 and F3 with a detection limit of 50 mg/kg, whereas the contractual requirement is 40 mg/kg.

Table II below summarizes the soil sampling at CAM-5 during the August, 2014 field program.

Table II: Summary of Soil Sampling at CAM-5 - August 2014

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

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).

Well dedicated Waterra foot valves and tubing were used to sample the groundwater. 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 all of the 4 monitoring wells at the CAM-5 Tier II Disposal Facility. A summary of the groundwater sampling undertaken at CAM-5 is summarized in Table III.

Table III: Summary of Groundwater Sampling at CAM-5, August 2014

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

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 chain-of-custody document, mercury was not analyzed by Exova. When available, QA Results from Maxxam were used.

2.4 THERMAL MONITORING

The 2014 thermal monitoring program at CAM-5 consisted of an inspection of the thermistors and data loggers, the downloading of all datasets, and the manual reading of thermistors. One datalogger was re-installed at VT-3 after off-site servicing and repair. Specific detailed information regarding temperature data is contained in the Tier II Disposal Facility section of this report. It should be noted that all datalogger batteries were changed in 2014.

2.5 FIELD NOTES AND DATA

Field notes from the 2014 Landfill Monitoring Program, including soil and water sampling, are included in Annex 3 for reference. Notes were written in field books, previously prepared logs or entered directly into a field computer. The notes were scanned to an Adobe pdf document for future reference and back up. Locations of all observations and features for the visual inspection were recorded using Garmin Oregon 400 hand-held GPS, which included a combination of continuous tracks and discrete waypoints. Datasets collected from the individual vertical thermistors were downloaded directly to a field laptop computer.

2.6 QUALITY CONTROL

It should be noted that, although samples were sent to Exova and Maxxam laboratories, only Exova's battles/jars were used.

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 prior to mobilisation and finalised 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, where they were checked in by laboratory representatives. All analyses were completed as specified on COC forms. Annex 1 provides communications with Exova concerning sample integrity at reception. The communications indicate that all samples received were acceptable for analysis.

2.7 QA/QC PROCEDURES

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

- 10% 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). Results can be found in Annex 1.
- 10% Archival Samples of soil to ESG.

2.8 PROJECT REFERENCES

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

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

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

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

D. *Post-Field Progress Report, CAM-5 former DEW Line Sites 2014*, *October, 2014.*

3 LOWER SITE LANDFILL – SOUTH

3.1 SUMMARY

The visual inspection of the Lower Site Landfill – South was completed on August 21, 2014. No soil or water sampling was performed for the 2104 monitoring of this site.

As of 2014, no erosion, staining or debris features with “significant” or “unacceptable” severity ratings were identified in the Preliminary Stability Assessment of the Lower Site Landfill – South. Five new settlement features were noticed in 2014 on the east crest and side, the central cover and the southwest slope. All other settlement features are consistent with previous observations. One new erosion feature was noted extending from the east crest down to the toe. All other erosion features were consistent with previous observations. Two new staining features were noted on the east cover (hydrocarbon stain) and the southwest toe (rust colour staining). Ponded water and seepage were noted on the east side slope and toe and were consistent with previous observations. Two new tensions cracks were noticed on the southwest and northwest side slopes. No exposed debris was noted.

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

The Visual Inspection Checklist/Report is included in Table IV of this report and has been completed as per the TOR. Please refer to Figure CAM-5.2 for a sketch of the Lower Site Landfill – South detailing the location of photographs of features.

Table IV: Visual Inspection Checklist / Report – Lower Site Landfill - South

DEW LINE CLEANUP: POST-CONSTRUCTION - LANDFILL MONITORING
VISUAL INSPECTION CHECKLIST
INSPECTION REPORT – PAGE 1 of 3

SITE NAME: CAM-5 Mackar Inlet
LANDFILL DESIGNATION: Lower Site Landfill – South (Regrade Landfill)
DATE OF INSPECTION: August 21, 2014
DATE OF PREVIOUS INSPECTION: August 29, 2013
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 4
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: LOWER SITE LANDFILL VISUAL INSPECTION (PAGE 2 OF 3)

Site Name: CAM-5, Mackar Inlet
Landfill: Low er Site Landfill - South (Regrade)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.
Signature:

Checklist Item	Present (Yes/No)	Location	Length (m)	Width (m)	Depth (m)	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE C See Figure CAM-5.2 (W side)	0.4 - 1	0.2 - 0.6	0.1 - 0.2	Occasional	Minor settlement	LSLF-3	Acceptable	Two minor depressions (potholes) on the surface of lobe. Consistent with previous observation.
		FEATURE D See Figure CAM-5.2 (W cover)	6	0.15 - 0.4	0.05 - 0.15		Minor settlement	LSLF-9, 10	Acceptable	Linear depression on the west landfill surface. Consistent with previous observation.
		FEATURE E See Figure CAM-5.2 (E cover)	0.5	0.5	0.2		Minor settlement	LSLF-22, 23	Acceptable	Two minor depression (potholes) on the surface of lobe. Consistent with previous observation.
		FEATURE M See Figure CAM-5.2 (E crest and side) - 3 New Obs.	0.3 - 0.6	0.2 - 0.4	0.05-0.1		Minor settlement	LSLF-27, 28, 30-33	Acceptable	Seven minor depressions on the east landfill surface.
		FEATURE P See Figure CAM-5.2 (C cover) - New Obs.	4	0.2	0.02		Minor settlement	LSLF-1	Acceptable	Linear depression on central cover area.
		FEATURE R See Figure CAM-5.2 (SW slope) - New Obs.	2	0.3	0.05		Minor settlement	LSLF-16	Acceptable	Linear depression on southwest side slope.
Erosion	Yes	FEATURE A See Figure CAM-5.2 (Access Road - W toe)	10	2	0.1	Occasional	Minor erosion channel	LSLF-1	Acceptable	Minor erosion across access road (west toe). Consistent with previous observation.
		FEATURE H See Figure CAM-5.2 (NW side slope)	20	0.5 - 2	0.1 - 0.3		Large erosion channel	LSLF-50-53	Marginal	Large erosion channel extending along the northwest side slope (downgradient of Feature J). Consistent with previous observation.
		FEATURE I See Figure CAM-5.2 (N side slope)	6 - 7	3	0.02		Minor erosion channels	LSLF-60, 61	Acceptable	Three minor erosion channels on the north side of the landfill. Self armouring. Consistent with previous observation.
		FEATURE J See Figure CAM-5.2 (NW side slope)	40	0.15 - 0.3	0.02 - 0.05		Minor erosion channel	LSLF-54	Acceptable	Minor erosion channel extending along northwest side of landfill (connects to Feature H). Consistent with previous observation.
		FEATURE N See Figure CAM-5.2 (E crest & side slope) 1 New Obs.	1 - 25	0.3 - 0.5	0.01 - 0.02		Scouring and minor erosion channels	LSLF-34-39	Acceptable	Scouring at crest and two minor erosion channels (1 new) on the east side slope of the landfill. Consistent with previous observation.

Table IV: LOWER SITE LANDFILL VISUAL INSPECTION (PAGE 3 OF 3)

Checklist Item	Present (Yes/No)	Location	Length (m)	Width (m)	Depth (m)	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	Yes	FEATURE G See Figure CAM-5.2 (NE toe)	1 -4	10	N/A	Isolated	Rust coloured staining and bacterial sheen	LSLF-40, 41, 43	Acceptable	Rust coloured staining and bacterial sheen present in ponded water at the toe of east slope of the landfill. Consistent with previous observation.
		FEATURE L See Figure CAM-5.2 (E cover) - 1 New Obs.	0.15 - 0.3	0.15 - 0.3	N/A	Isolated	Hydrocarbon stains	LSLF- 21, 29	Acceptable	Two small hydrocarbon stains on east cover..
		FEATURE Q See Figure CAM-5.2 (SW toe) - New Obs.	1 - 4	0.4 - 2	N/A	Isolated	Rust coloured staining	LSLF-5-7	Acceptable	Two localized areas along southwest toe. Appears to be associated with seasonal ponding/seepage. Dry at time of inspection.
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	Yes	FEATURE G See Figure CAM-5.2 (NE side slope and toe)	8 - 15	1 - 4	N/A	Occasional	Seepage along toe and slope	LSLF- 40-43, 45, 47, 48	Acceptable	Seepage and ponded water along east side slope and toe. Large wetted area on east side slope. Consistent with previous observation.
Debris exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Feature of Note	Yes	FEATURE K See Figure CAM-5.2 (S cover)	N/A	N/A	N/A	N/A	Ponded water on south cover	N/A	N/A	Not observed during 2014 inspection.
		FEATURE O See Figure CAM-5.2 (NW toe)	N/A	N/A	N/A	N/A	Ponded water northwest of landfill	N/A	N/A	Not observed during 2014 inspection.
		FEATURE R See Figure CAM-5.2 (SW side slope) - New Obs.	3	0.001-0.003	Unknown	Isolated	Tension crack	LSLF-14-16	N/A	Tension crack extending across southwest side slope. Localized settlement in area.
		FEATURE S See Figure CAM-5.2 (NW side slope) - New Obs.	16	0.02-0.1	Unknown	Isolated	Partially infilled tension crack	LSLF-55-57	Acceptable	Tension crack extending across cover at inside corner on northwest side of landfill.
Additional Photographs	Yes	See Figure CAM-5.2 and Photographic Record	N/A	N/A	N/A	N/A	General photographic record	N/A	N/A	No features of note, general photos of the landfill for record keeping purposes.
Overall Landfill Performance	**Acceptable**									

3.2 PRELIMINARY STABILITY ASSESSMENT

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

Table V: Preliminary Stability Assessment – Lower Site Landfill – South

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

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, 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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

3.3 LOCATION PLAN

The Location Plan for the Lower Site Landfill - South has been completed as per the TOR and is included in the following page as Figure CAM-5.2 Lower Site Landfill – South.

552 950 E

553 100 E

553 250 E

7 581 500 N

7 581 350 N

ACCESS ROAD

TYPE 1 GRANULAR FILL

FEATURE G
PONDED WATER

FEATURE H
EROSION

FEATURE N
EROSION

FEATURE J
EROSION

FEATURE G
SEEPAGE, PONDED WATER AND STAINING

FEATURE S
CRACK

FEATURE M
7 X SETTLEMENT

FEATURE I
EROSION

DRAINAGE COURSE (TYP.)

FEATURE A
EROSION

FEATURE L
STAINING

FEATURE D
SETTLEMENT

FEATURE E
2 x SETTLEMENT

FEATURE C
2 x SETTLEMENT

FEATURE L
STAINING

FEATURE P
SETTLEMENT

FEATURE Q
2 x STAINING
PONDING

FEATURE R
SETTLEMENT/CRACK

BOULDER FIELD

LOWER SITE LANDFILL–SOUTH

CLOSED LANDFARM

LOW AREA
(SWAMP)

RESHAPED AREA

LEGEND

- BODY OF WATER
- SOIL SAMPLE LOCATION
- PHOTOGRAPH LOCATION
- SETTLEMENT (NTS)
- EROSION (NTS)
- STAINING
- PONDING
- SEEPAGE (NTS)
- CRACK (NTS)

0 15m 30m 45m 60m 75m

NO.	VERSION	DATE	P.L.	A.P.	P.G.
1	FINAL	15–06–26	PAR	VERIF.	APPR.

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Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-5, MACKAR INLET, NUNAVUT

LOWER SITE LANDFILL - SOUTH

SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Meter	1 : 1,500	JUNE 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. Eng
PROJECT NO:	DRAWING NO:	PAGE
CD2655_400_403	CD2655_400_403_101-CAM-5.2	CAM-5.2

FIGURE CAM-5.2

3.4 PHOTOGRAPHIC RECORDS

The Photographic Record for Lower Site Landfill – South 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 – Lower Site Landfill – South (Page 1 of 2)

Site Name: CAM-5, Mackar Inlet
Landfill: Lower Site Landfill - South (Regrade)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (LSLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C514_2685	4 399	14-08-21	553059	7581464	View looking south at erosion across access road to landfill - FEATURE A
2	C514_2686	4 292	14-08-21	553062	7581453	View looking southeast along west toe of Lower Site Landfill - South
3	C514_2687	4 290	14-08-21	553113	7581412	View looking northwest at two pothole depressions on west side of Lower Site Landfill - South - FEATURE C
4	C514_2688	4 325	14-08-21	553116	7581414	View looking southeast along west side of Lower Site Landfill - South
5	C514_2689	4 369	14-08-21	553111	7581408	View looking southwest at minor seepage along west toe of Lower Site Landfill - South. Note staining - FEATURE Q
6	C514_2690	4 280	14-08-21	553102	7581398	View looking northeast at minor seepage along west toe of Lower Site Landfill - South. Note staining - FEATURE Q
7	C514_2691	4 430	14-08-21	553125	7581403	View of Lower Site Landfill - South staining at toe of Lower Site Landfill - South - FEATURE Q
8	C514_2692	4 372	14-08-21	553130	7581399	View of Lower Site Landfill - South ponded water along southwest toe of Lower Site Landfill - South - FEATURE G
9	C514_2693	4 375	14-08-21	553128	7581413	View looking northwest at linear depression with cobbles on southwest cover of Lower Site Landfill - South - FEATURE D
10	C514_2694	4 405	14-08-21	553124	7581422	View looking southwest at linear depression with cobbles on southwest cover of Lower Site Landfill - South - FEATURE D
11	C514_2695	4 270	14-08-21	553142	7581386	View looking northwest along southwest side of Lower Site Landfill - South
12	C514_2696	4 299	14-08-21	553152	7581389	View looking east along south side of Lower Site Landfill - South
13	C514_2697	1 159	14-08-21	553148	7581397	Panoramic view looking northwest to east from south end of Lower Site Landfill - South
14	C514_2698	4 439	14-08-21	553147	7581387	View looking northwest at tension crack along southwest crest of Lower Site Landfill - South - FEATURE R
15	C514_2699	4 247	14-08-21	553143	7581395	View of tension crack along southwest crest of Lower Site Landfill - South - FEATURE R
16	C514_2700	4 431	14-08-21	553145	7581394	View looking southwest at linear depression on southwest side of Lower Site Landfill - South - FEATURE R
17	C514_2701	4 304	14-08-21	553169	7581428	View looking west along south side of Lower Site Landfill - South
18	C514_2702	4 318	14-08-21	553170	7581430	View looking northeast along southeast side of Lower Site Landfill - South
19	C514_2703	4 369	14-08-21	553144	7581439	View looking north at linear depression on southeast cover of Lower Site Landfill - South - FEATURE P
20	C514_2704	4 384	14-08-21	553147	7581447	View looking west at linear depression on southeast cover of Lower Site Landfill - South - FEATURE P
21	C514_2705	4 299	14-08-21	553150	7581455	View of single stain on east cover of Lower Site Landfill - South - FEATURE L
22	C514_2706	4 458	14-08-21	553173	7581449	View looking north at two pothole depressions near east crest - FEATURE E
23	C514_2707	4 339	14-08-21	553165	7581454	View looking northeast at two pothole depressions near east crest - FEATURE E
24	C514_2708	4 351	14-08-21	553160	7581471	View looking north-northwest along east side slope of Lower Site Landfill - South
25	C514_2710	4 341	14-08-21	553160	7581463	View looking southwest across central cover area of Lower Site Landfill - South
26	C514_2711	4 373	14-08-21	553157	7581464	View looking west across north cover area of Lower Site Landfill - South
27	C514_2712	4 342	14-08-21	553154	7581468	View looking north at two pothole depressions near east crest - FEATURE M
28	C514_2713	4 345	14-08-21	553146	7581471	View looking east at two pothole depressions near east crest - FEATURE M
29	C514_2714	4 469	14-08-21	553145	7581465	View of small stain on east cover - FEATURE L

Table VI: Landfill Visual Inspection Photo Log – Lower Site Landfill – South (Page 2 of 2)

Photo (LSLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
30	C514_2715	4 377	14-08-21	553147	7581485	View looking east at small depression on east side slope - FEATURE M
31	C514_2716	4 430	14-08-21	553155	7581484	View looking northwest at small depression on east side slope - FEATURE M
32	C514_2717	4 384	14-08-21	553140	7581487	View looking east at 4 small depressions near east crest of Lower Site Landfill - South - FEATURE M
33	C514_2718	4 428	14-08-21	553146	7581495	View looking south at 4 small depressions near east crest of Lower Site Landfill - South - FEATURE M
34	C514_2719	4 425	14-08-21	553139	7581498	View looking east at erosion along east crest (scouring) of Lower Site Landfill - South - FEATURE N
35	C514_2720	4 433	14-08-21	553143	7581505	View looking south at erosion along east crest (scouring) of Lower Site Landfill - South - FEATURE N
36	C514_2721	4 381	14-08-21	553132	7581506	View looking at erosion on east side slope of Lower Site Landfill - South - FEATURE N
37	C514_2722	4 381	14-08-21	553129	7581510	View looking northeast at erosion (fines only) on east side slope of Lower Site Landfill - South - FEATURE N
38	C514_2723	4 306	14-08-21	553155	7581519	View looking west at erosion (fines only) on east side slope of Lower Site Landfill - South - FEATURE N
39	C514_2724	4 420	14-08-21	553156	7581513	View looking southwest at erosion (fines only) on east side slope of Lower Site Landfill - South - FEATURE N
40	C514_2725	4 458	14-08-21	553160	7581507	View looking northwest at staining and water ponding along northeast toe of Lower Site Landfill - South - FEATURE G
41	C514_2726	4 349	14-08-21	553156	7581510	View looking at staining and bacterial sheen on water ponding along northeast toe of Lower Site Landfill - South - FEATURE G
42	C514_2727	4 392	14-08-21	553168	7581509	View looking northwest from southeast edge of Lower Site Landfill - South ponded area on east toe of Lower Site Landfill - South - FEATURE G
43	C514_2728	4 444	14-08-21	553154	7581527	View looking south at staining and ponded water along northeast toe of Lower Site Landfill - South - FEATURE G
44	C514_2729	4 406	14-08-21	553150	7581525	View looking northwest at ponded water along northeast toe of Lower Site Landfill - South
45	C514_2730	4 352	14-08-21	553141	7581540	View looking south along east toe of Lower Site Landfill - South. Note wetted area on northeast side slope - FEATURE G
46	C514_2731	4 446	14-08-21	553128	7581533	View looking south along east crest of Lower Site Landfill - South
47	C514_2732	4 292	14-08-21	553129	7581537	View looking southeast at east side slope of Lower Site Landfill - South. Note wetted on side slope - FEATURE G
48	C514_2733	4 447	14-08-21	553145	7581539	View looking south at wetted area on northeast side slope - FEATURE G
49	C514_2734	4 363	14-08-21	553123	7581539	View looking northeast along northeast side slope of Lower Site Landfill - South
50	C514_2735	4 397	14-08-21	553110	7581526	View looking north at erosion on north side slope - FEATURE H
51	C514_2736	4 382	14-08-21	553105	7581537	View looking north at erosion on north side slope - FEATURE H
52	C514_2737	4 346	14-08-21	553097	7581548	View looking south at erosion on north side slope - FEATURE H
53	C514_2738	4 405	14-08-21	553108	7581530	View looking south at erosion on north side slope - FEATURE H
54	C514_2739	4 426	14-08-21	553113	7581489	View looking north at minor erosion on west side of Lower Site Landfill - South - FEATURE J
55	C514_2740	4 397	14-08-21	553129	7581494	View looking northwest at crack on north cover of Lower Site Landfill - South - FEATURE S
56	C514_2742	4 407	14-08-21	553120	7581498	View at crack on north cover of Lower Site Landfill - South - FEATURE S
57	C514_2743	4 441	14-08-21	553108	7581503	View looking southeast at crack on north cover of Lower Site Landfill - South FEATURE S
58	C514_2744	1 044	14-08-21	553104	7581487	Panoramic view looking southwest to east from north side of Lower Site Landfill - South
59	C514_2745	4 412	14-08-21	553103	7581492	View looking northeast at erosion extending along the northwest side of Lower Site Landfill - South
60	C514_2746	4 403	14-08-21	553086	7581474	View looking south-southeast at minor erosion on the northwest side slope of Lower Site Landfill - South - FEATURE I
61	C514_2747	4 324	14-08-21	553077	7581485	View looking south-southeast at minor erosion on the northwest side slope of Lower Site Landfill - South - FEATURE I
62	C514_2748	4 375	14-08-21	553064	7581469	View looking northeast along northwest side of Lower Site Landfill - South

4 NON-HAZARDOUS WASTE LANDFILL

4.1 SUMMARY

The 2014 monitoring of the Non-Hazardous Waste Landfill (NHWLF) conducted on August 21, 2014. No soil or water sampling was performed for the 2014 monitoring of this site.

As of the 2014 monitoring event, no feature with “significant” or “unacceptable” severity ratings was identified in the Preliminary Stability Assessment of the NHWLF. One isolated area of settlement and staining, and numerous minor erosional features were observed on the landfill surface or side slopes, all of which have an acceptable severity rating. During the 2014 investigation, additional erosional features were identified on the north, south and east side slopes.

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

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table VII of this report. Please refer to Figure CAM-5.3 for a sketch of the NHWL detailing the location of photographs and erosional features.

Table VII: Visual Inspection Checklist / Report – Non-Hazardous Waste Landfill

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

SITE NAME: CAM-5 Mackar Inlet
LANDFILL DESIGNATION: Non-Hazardous Waste Landfill (New landfill)
DATE OF INSPECTION: August 21, 2014
DATE OF PREVIOUS INSPECTION: August 29, 2013
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT: 4
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 VII: NON-HAZARDOUS WASTE LANDFILL VISUAL INSPECTION (PAGE 2 OF 2)

Site Name: CAM-5, Mackar Inlet
Landfill: Non-Hazardous Waste Landfill (New)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.
Signature:

Checklist Item	Present (Yes/No)	Location	Length (m)	Width (m)	Depth (m)	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE G See Figure CAM-5.3 (SW crest)	1.25	0.15	0.05	Isolated	Linear depression	NHWLF-17	Acceptable	Linear depression running parallel to west crest. Consistent with previous observation.
		FEATURE M See Figure CAM-5.3 (SE side slope) - New obs.	1.2	0.4	0.07	Isolated	Linear depression	NHWLF-9, 10	Acceptable	Linear depression on side slope adjacent to Type 1 cover.
Erosion	Yes	FEATURE B See Figure CAM-5.3 (N side slope)	8	0.1	0.05	Occasional	2 minor erosion channels	N/A	Acceptable	Not observed during 2014 assessment.
		FEATURE H See Figure CAM-5.3 (S side slope) - 3 New Obs.	6	0.1	0.01 - 0.02		Minor erosion channels	NHWLF-11-14		5 areas of minor erosion on south side slope. Self armouring.
		FEATURE I See Figure CAM-5.3 (S side slope)	6	0.1	0.01 - 0.02		Minor erosion channel	NHWLF-16		Self armouring erosion channel on the south side slope of the landfill. Consistent with previous observation.
		FEATURE J See Figure CAM-5.3 (S toe)	40	0.5 - 2	0.05 - 0.1		Minor erosion channel	NHWLF-22		Minor erosion in drainage feature extending along south side and southwest corner of landfill. Consistent with previous observation.
		FEATURE K See Figure CAM-5.3 (N side slope) - 1 New Obs.	8	0.15 - 0.2	0.02 - 0.05		Minor erosion channels	NHWLF-30-33		2 areas of minor erosion channels on north slope of the landfill.
		FEATURE L See Figure CAM-5.3 (E side slope) - New Obs.	6	0.15	0.05		Minor erosion channels	NHWLF-39, 41-43		3 areas of minor erosion channels on east slope of the landfill.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	Yes	FEATURE F See Figure CAM-5.3 (NE cover)	0.6	0.2	N/A	Isolated	Hydrocarbon Stain	NHWLF-40	Acceptable	Minor hydrocarbon stain on the landfill surface. Consistent with previous observation.
Vegetation Stress	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Debris Exposed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Presence/Condition of Monitoring Instruments	Yes	N/A	N/A	N/A	N/A	N/A	Monitoring wells	N/A	N/A	Monitoring well casings are in good condition.
Other Feature of Note	Yes	Feature D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not observed during 2014 assessment.
		FEATURE E See Figure CAM-5.3 (S and W toe)	100	0.5 - 4	0.05 - 0.3	Isolated	Drainage and ponded water	NHWLF-15, 22, 23	Acceptable	Water along south and west sides of landfill. Consistent with previous observation.
Additional Photographs	Yes	See Figure CAM-5.3 and Photographic Record	N/A	N/A	N/A	N/A	General photographic record	N/A	N/A	No features of note, general photos of the landfill for record keeping purposes.
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 VIII hereafter.

Table VIII: Preliminary Stability Assessment – Non-Hazardous Waste Landfill

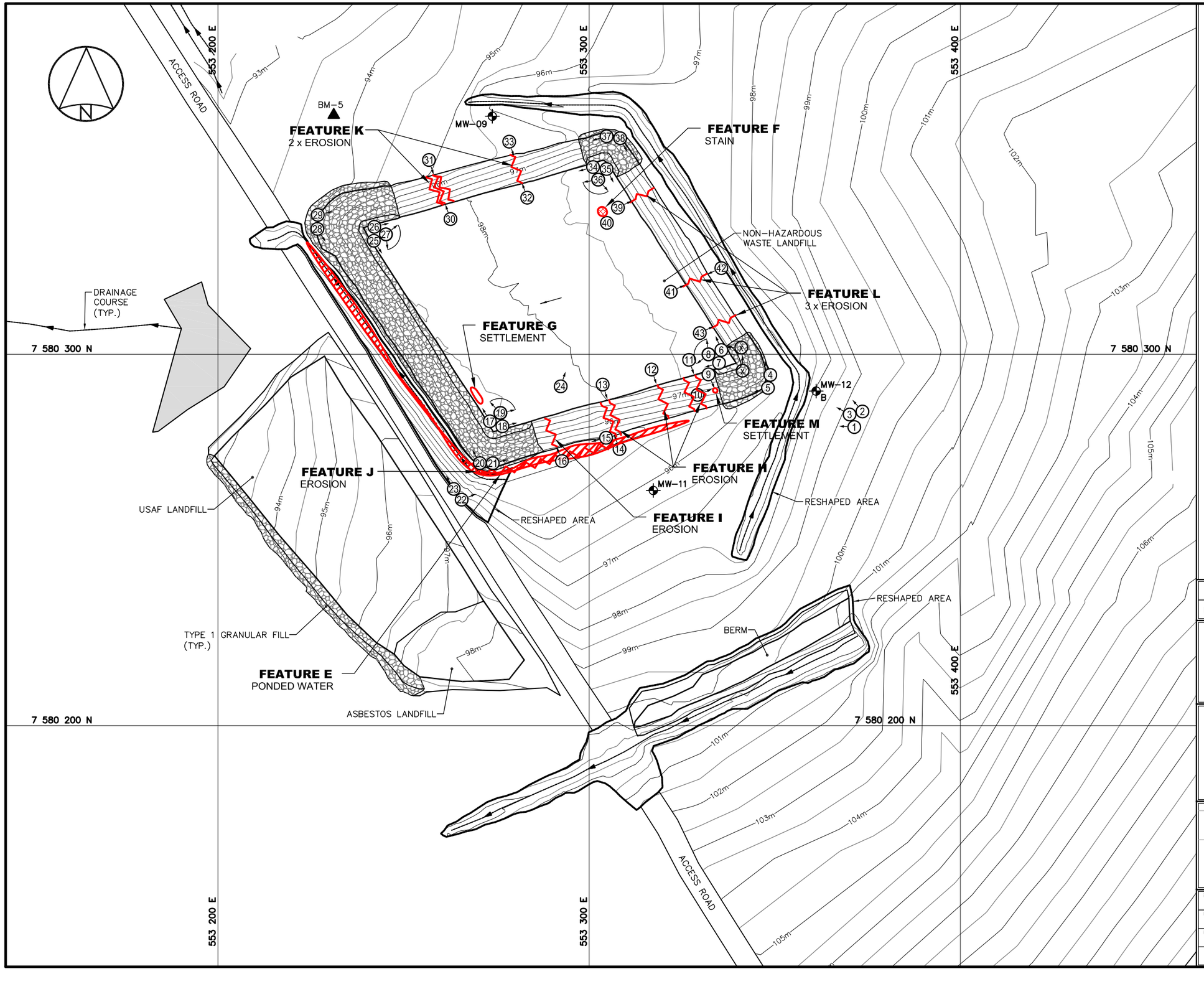
Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Occasional
Frost Action	Not observed	None
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Acceptable	Isolated
Debris Exposure	Not observed	None
Overall Landfill Performance	**Acceptable**	

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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

4.3 LOCATION PLAN

The Location Plan for the NHWLF has been completed as per the TOR and is included in the following page as Figure CAM-5.3 Mackar Inlet – Non-Hazardous Waste Landfill.



LEGEND

- BODY OF WATER
- BM-6 PERMANENT BENCHMARK LOCATION (1)
- MONITORING WELL LOCATION (2)
- B BACKGROUND MONITORING WELL LOCATION (1)
- 1 PHOTOGRAPH LOCATION
- EROSION (NTS)
- PONDING
- STAINING
- SETTLEMENT (NTS)

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

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15-06-26	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-5, MACKAR INLET, NUNAVUT

NON-HAZARDOUS WASTE LANDFILL

SITE REMEDIATION SOLUTIONS

Biogenie, a division of EnGlobe Corp.
4495 Wilfrid-Hamel blvd, Suite 200
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Phone : 418-653-4422 www.biogenie-env.com

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 1,500	JUNE 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. Eng
PROJECT NO:	DRAWING NO:	PAGE
CD2655_400_403	CD2655_400_403_101-CAM-5.3	CAM-5.3

FIGURE CAM-5.3

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4.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the NHWLF has been completed as per the TOR and is included in the following pages as Table IX. Full-sized photographs are contained in the Addendum DVD-ROM.

Table IX: Landfill Visual Inspection Photo Log – Non-Hazardous Waste Landfill (page 1 of 2)

Site Name: CAM-5, Mackar Inlet
Landfill: Non-Hazardous Waste Landfill (New)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (NHWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C514_2616	4 393	14-08-21	553372	7580281	View looking west-southwest at south side of NHWLF
2	C514_2617	4 140	14-08-21	553374	7580284	View looking northwest at east side of NHWLF
3	C514_2618	4 359	14-08-21	553371	7580283	View looking west at east corner of NHWLF
4	C514_2619	4 143	14-08-21	553349	7580293	View looking northwest along east side slope of NHWLF
5	C514_2620	4 234	14-08-21	553349	7580292	View looking southwest along south side slope of NHWLF
6	C514_2621	4 407	14-08-21	553335	7580300	View looking northwest along east crest of NHWLF
7	C514_2622	4 378	14-08-21	553335	7580299	View looking southwest along south crest of NHWLF
8	C514_2623	1 173	14-08-21	553333	7580300	Panoramic view looking southwest to north from east corner of NHWLF
9	C514_2624	4 318	14-08-21	553332	7580296	View looking southeast at small depression on south side slope of NHWLF - FEATURE M
10	C514_2625	4 341	14-08-21	553331	7580290	View looking east at small depression on south side slope of NHWLF - FEATURE M
11	C514_2626	4 403	14-08-21	553327	7580298	View looking southeast at minor erosion on south side slope - FEATURE H
12	C514_2627	4 420	14-08-21	553318	7580295	View looking southeast at minor erosion on south side slope - FEATURE H
13	C514_2628	4 443	14-08-21	553304	7580290	View looking southeast at minor erosion on south side slope - FEATURE H
14	C514_2629	4 420	14-08-21	553308	7580275	View looking northwest at minor erosion on south side slope - FEATURE H
15	C514_2630	4 451	14-08-21	553304	7580277	View looking west-southwest at fines deposited along south toe of NHWLF
16	C514_2631	4 390	14-08-21	553292	7580272	View looking northwest at minor erosion on south side slope - FEATURE I
17	C514_2632	4 302	14-08-21	553274	7580281	View looking northwest along west crest of NHWLF
18	C514_2633	4 378	14-08-21	553276	7580281	View looking northeast along south crest of NHWLF
19	C514_2634	1 250	14-08-21	553276	7580283	Panoramic view looking northwest to east from south corner of NHWLF
20	C514_2635	4 281	14-08-21	553271	7580270	View looking northwest along west side slope of NHWLF
21	C514_2636	4 445	14-08-21	553273	7580270	View looking northeast along south side slope of NHWLF
22	C514_2637	4 353	14-08-21	553266	7580261	View looking northeast at minor erosion in drainage feature extending along south toe of NHWLF - FEATURE J
23	C514_2638	4 314	14-08-21	553264	7580263	View looking northwest at drainage feature extending along west toe of NHWLF
24	C514_2639	4 420	14-08-21	553293	7580292	View looking north across cover of NHWLF
25	C514_2640	4 417	14-08-21	553242	7580331	View looking southeast along west crest of NHWLF

Table IX: Landfill Visual Inspection Photo Log – Non-Hazardous Waste Landfill (page 2 OF 2)

Photo (NHWLF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
26	C514_2641	4 354	14-08-21	553242	7580333	View looking northeast along north crest of NHWLF
27	C514_2642	1 342	14-08-21	553245	7580333	Panoramic view looking northeast to south from west corner of NHWLF
28	C514_2643	4 346	14-08-21	553226	7580334	View looking southeast along west side slope of NHWLF
29	C514_2644	4 425	14-08-21	553227	7580337	View looking northeast along north side slope of NHWLF
30	C514_2645	4 320	14-08-21	553262	7580337	View looking northwest at minor erosion on north side slope of NHWLF - FEATURE K
31	C514_2647	4 364	14-08-21	553257	7580350	View looking southeast at minor erosion on north side slope of NHWLF - FEATURE K
32	C514_2648	4 355	14-08-21	553283	7580344	View looking northwest at minor erosion on north side slope of NHWLF - FEATURE K
33	C514_2649	4 356	14-08-21	553279	7580354	View looking southeast at minor erosion on north side slope of NHWLF - FEATURE K
34	C514_2650	4 420	14-08-21	553302	7580351	View looking southwest along north crest of NHWLF
35	C514_2651	4 428	14-08-21	553304	7580351	View looking southeast along east crest of NHWLF
36	C514_2652	1 294	14-08-21	553302	7580348	Panoramic view looking southeast to west from north corner of NHWLF
37	C514_2653	4 172	14-08-21	553306	7580359	View looking southwest along north side slope of NHWLF
38	C514_2654	4 220	14-08-21	553308	7580358	View looking southeast along east side slope of NHWLF
39	C514_2655	4 337	14-08-21	553309	7580340	View of NHWLF erosion of NHWLF fine along top 1 m of NHWLF slope - FEATURE L
40	C514_2656	4 453	14-08-21	553304	7580337	View of NHWLF small stain on northeast cover of NHWLF - FEATURE F
41	C514_2657	4 275	14-08-21	553323	7580318	View looking northeast at minor erosion on east side slope of NHWLF - FEATURE L
42	C514_2658	4 388	14-08-21	553334	7580322	View looking southwest at minor erosion on east side slope of NHWLF - FEATURE L
43	C514_2659	4 362	14-08-21	553331	7580306	View looking northeast at minor erosion on east side slope of NHWLF - FEATURE L

5 USAF & ASBESTOS LANDFILL

5.1 SUMMARY

The 2014 monitoring of the USAF & Asbestos Landfill conducted on August 21, 2014 consisted of a visual inspection. No soil sampling was performed in 2014.

As of the 2014 monitoring event, no feature with “significant” or “unacceptable” severity ratings was identified in the Preliminary Stability Assessment of the USAF & Asbestos Landfill. Little to no change was observed since the 2013 investigation, as the features identified at the landfill appear to be primarily construction artifacts (rutting caused by various vehicles). New single settlement and erosional features were identified in 2014.

Based on observations made during the 2014 monitoring program, the USAF & Asbestos landfill have an acceptable performance rating in terms of debris containment.

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table X in this report. Please refer to Figure CAM-5.4 for a sketch of the USAF & Asbestos Landfill detailing the location of photographs and features.

Table X: Visual Inspection Checklist / Report – USAF & Asbestos Landfill

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

SITE NAME: CAM-5 Mackar Inlet
LANDFILL DESIGNATION: USAF & Asbestos Landfills (Regrade landfill)
DATE OF INSPECTION: August 21, 2014
DATE OF PREVIOUS INSPECTION: August 29, 2013
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT: 4
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 X: USAF and ASBESTOS LANDFILL VISUAL INSPECTION (PAGE 2 OF 2)

Site Name: CAM-5, Mackar Inlet
Landfill: USAF and Asbestos landfills (Regrade)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.
Signature:

Checklist Item	Present (Yes/No)	Location	Length (m)	Width (m)	Depth (m)	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-5.4 (SE crest)	2	0.6	0.2	Isolated	Linear depression	USAF-1	Acceptable	Linear depression adjacent to access road. Consistent with previous observation.
		FEATURE C See Figure CAM-5.4 (W crest)	0.6 - 1	0.15 - 0.2	0.05	Isolated	Minor depressions	USAF-11-13	Acceptable	3 linear type depressions near west crest of landfill. Consistent with previous observation.
		FEATURE G See Figure CAM-5.4 (N cover) - New Obs.	0.2 - 2	0.15	0.1	Isolated	Minor depressions	USAF-18, 19	Acceptable	2 linear type depressions on north cover of landfill.
Erosion	Yes	FEATURE H See Figure CAM-5.4 (E toe) - New Obs.	30	0.1	0.02 - 0.04	Isolated	Minor erosion	USAF-24	Acceptable	Minor erosion extending along east toe. Self armouring.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	No	Feature B	0.4	0.2	N/A	Isolated	Hydrocarbon Stain	N/A	Acceptable	Not observed during 2014 assessment.
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Debris Exposed	Yes	Feature J	0.1	0.15	0.1 (exposed)	Isolated	Landfill plaque	USAF-10	Acceptable	DIAND Landfill corner mark, permit # N92X741. Consistent with previous observation.
Presence/Condition of Monitoring Instruments	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Features of Note	Yes	FEATURE E See Figure CAM-5.4 (S and NE cover)	1 - 20	0.2 - 0.5	0.05 - 0.15	Marginal	Vehicle tracks	USAF-4-6, 17	Acceptable	Vehicle tracks and rutting are present at several locations on the landfill surface. Consistent with previous observation.
		FEATURE F See Figure CAM-5.4 (NE cover)	1	1	0.2	Isolated	Granular fertilizer	USAF-23	Acceptable	A small pile of granular fertilizer remains at the north-east corner of the regrade. Consistent with previous observation.
		FEATURE I See Figure CAM-5.4 (N end of landfill)	14	14	0.1	Isolated	Rough Grading	USAF-21, 22	Acceptable	Appears additional fill material has been placed at north end of As-Built regrade area. Rough grading of surface. Consistent with previous observation.
Additional Photographs	Yes	See Figure CAM-5.4 and Photographic Record	N/A	N/A	N/A	N/A	General photographic record	N/A	N/A	No features of note, general photos of the landfill for record keeping purposes.
Overall Landfill Performance	**Acceptable**									

5.2 PRELIMINARY STABILITY ASSESSMENT

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

Table XI: Preliminary Stability Assessment – USAF and Asbestos Landfill

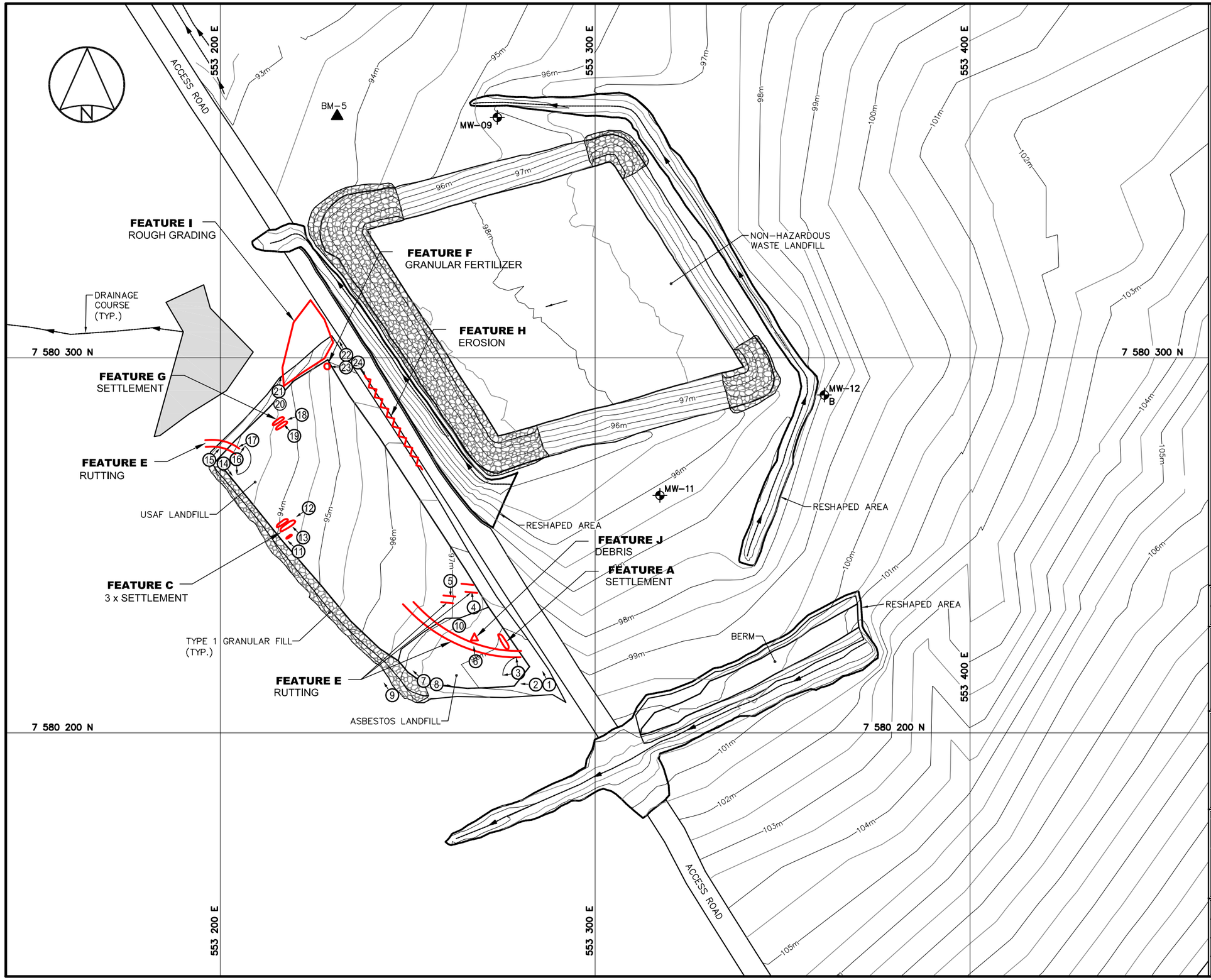
Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	None
Staining	Not observed	None
Vegetation Stress	Not observed	None
Seepage/Ponded Water	Not observed	None
Debris Exposure	Acceptable	Isolated
Overall Landfill Performance	**Acceptable**	

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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

5.3 LOCATION PLAN

The Location Plan for the USAF & Asbestos Landfills has been completed as per the TOR and is included in the following page as Figure CAM-5.4 Mackar Inlet – USAF & Asbestos Landfills.



LEGEND

- BODY OF WATER
- BM-6 PERMANENT BENCHMARK LOCATION (1)
- MONITORING WELL LOCATION (2)
- B BACKGROUND MONITORING WELL LOCATION (1)
- 1 PHOTOGRAPH LOCATION
- SETTLEMENT (NTS)
- RUTTING (NTS)
- DEBRIS (NTS)

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

NO.	VERSION	DATE	PAR	VERIF.	APPR.
1	FINAL	15-06-26	P.L.	A.P.	P.G.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-5, MACKAR INLET, NUNAVUT

USAF AND ASBESTOS LANDFILLS

SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 1,500	JUNE 2015
DRAWN BY:	VERIFIED BY:	APPROVED BY:
L. LA PIERRE	A. PASSALIS	P. GÉLINAS P. Eng
PROJECT NO:	DRAWING NO:	PAGE
CD2655_400_403	CD2655_400_403_101-CAM-5.4	CAM-5.4

FIGURE CAM-5.4

5.4 PHOTOGRAPHIC RECORDS

The Photographic Record for the USAF & Asbestos Landfills has been completed as per the TOR and is included in the following pages as Table XII. Full-sized photographs are contained in the Addendum DVD-ROM.

Table XII: Landfill Visual Inspection Photo Log – USAF & Asbestos Landfill

Site Name: CAM-5, Mackar Inlet
Landfill: USAF (Regrade)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (USAF-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C514_2660	4 398	14-08-21	553287	7580212	View looking northwest along east side of Landfills. Note linear depression on right extending parallel to access road - FEATURE A
2	C514_2661	4 283	14-08-21	553285	7580212	View looking west along south side of USAF and Asbestos Landfills
3	C514_2662	1 102	14-08-21	553280	7580215	Panoramic view looking west to north from southwest corner of USAF and Asbestos Landfills
4	C514_2663	4 411	14-08-21	553268	7580234	View looking north at tire ruts on south cover of USAF and Asbestos Landfills
5	C514_2664	4 329	14-08-21	553261	7580238	View looking south at tire ruts on south cover of USAF and Asbestos Landfills
6	C514_2665	4 302	14-08-21	553269	7580220	View looking north at tire ruts on south cover of USAF and Asbestos Landfills
7	C514_2666	4 298	14-08-21	553255	7580214	View looking northwest along west side of USAF and Asbestos Landfills
8	C514_2667	4 442	14-08-21	553258	7580214	View looking east along south side of USAF and Asbestos Landfills
9	C514_2668	4 313	14-08-21	553247	7580210	View looking northwest at west toe of USAF and Asbestos Landfills
10	C514_2670	4 392	14-08-21	553264	7580229	View of former DIAND landfill corner marker - Feature J
11	C514_2671	4 306	14-08-21	553220	7580249	View looking northwest at minor depression near west crest of USAF and Asbestos Landfills - FEATURE C
12	C514_2672	4 403	14-08-21	553223	7580259	View looking southwest at linear depressions on west cover of USAF and Asbestos Landfills - FEATURE C
13	C514_2673	4 323	14-08-21	553221	7580253	View looking northwest at linear depressions on west cover of USAF and Asbestos Landfills - FEATURE C
14	C514_2674	4 408	14-08-21	553201	7580271	View looking southeast along west side of USAF and Asbestos Landfills
15	C514_2675	4 401	14-08-21	553199	7580273	View looking northeast along north side of USAF and Asbestos Landfills
16	C514_2676	1 185	14-08-21	553203	7580273	Panoramic view looking northeast to south from northwest corner of USAF and Asbestos Landfills
17	C514_2677	4 344	14-08-21	553208	7580278	View looking southwest at tire ruts on northwest corner of USAF and Asbestos Landfills - FEATURE E
18	C514_2678	4 374	14-08-21	553220	7580284	View looking southwest at minor erosion on north side of USAF and Asbestos Landfills- FEATURE G
19	C514_2679	4 426	14-08-21	553219	7580280	View looking northwest at minor erosion on north side of USAF and Asbestos Landfills - FEATURE G
20	C514_2680	4 401	14-08-21	553217	7580288	View of sparse vegetation on north side of USAF and Asbestos Landfills
21	C514_2681	4 360	14-08-21	553215	7580290	View looking north at new cover material placed at the north end of USAF and Asbestos Landfills
22	C514_2682	4 397	14-08-21	553233	7580301	View looking north-northwest along east side - new cover material placed at the north end of USAF and Asbestos Landfills
23	C514_2683	4 324	14-08-21	553233	7580297	View of three small piles of USAF and Asbestos Landfills fertilize on north side of USAF and Asbestos Landfills
24	C514_2684	4 314	14-08-21	553236	7580298	View looking southeast at minor erosion extending along long access road (east side of USAF and Asbestos Landfills) - FEATURE H

6 TIER II DISPOSAL FACILITY

6.1 SUMMARY

The 2014 monitoring of the Tier II Disposal Facility conducted on August 29, 2014 consisted of a visual inspection to identify areas of erosion conducted and as per the TOR, soil and groundwater samples were taken as well as thermal monitoring.

No TPH, PCBs or relatively high metal concentrations were detected at any of the soil sampling locations. Two monitoring wells were dry (MW-5 and MW-7) and a third well (MW-6) contained insufficient water at the time of the assessment and consequently could not be sampled. No TPH, PCBs or relatively high metal concentrations were detected in the sample collected from monitoring well MW-8. As Exova did not perform mercury analysis, QA result from Maxxam is presented (with associated method detection limit).

All dataloggers and thermistors were observed to be functioning properly at the time of inspection. The datalogger removed from VT-3 in August 2013 was re-installed after off-site repair and maintenance.

As of the 2014 monitoring event, no feature with “significant” or “unacceptable” severity ratings was identified in the Preliminary Stability Assessment of the Tier II Disposal Facility. A few areas with minor settlement and erosion were noted. This includes one existing and one new area of settlement and two new areas of erosion. One small existing stain was also noted on the cover of the facility.

Based on observations made during the 2014 monitoring program, The Tier II Disposal Facility overall performance rating is acceptable.

The Visual Inspection Checklist/Report has been completed as per the TOR and is included as Table XIII of this report. Please refer to Figure CAM-5.5 for a sketch of the Tier II Disposal Facility detailing the location of photographs and features.

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

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

SITE NAME: CAM-5 Mackar Inlet
LANDFILL DESIGNATION: Tier II Disposal Facility (New landfill)
DATE OF INSPECTION: August 21, 2014
DATE OF PREVIOUS INSPECTION: August 29, 2013
INSPECTED BY: A. Passalis
REPORT PREPARED BY: A. Passalis
MONITORING EVENT NUMBER: 4
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 XIII: TIER II DISPOSAL FACILITY VISUAL INSPECTION (PAGE 2 OF 2)

Site Name: CAM-5, Mackar Inlet
Landfill: Tier II Disposal Facility (New)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.
Signature:

Checklist Item	Present (Yes/No)	Location	Length (m)	Width (m)	Depth (m)	Extent	Description	Photographic Record	Severity Rating	Additional Comments
Settlement	Yes	FEATURE A See Figure CAM-5.5 (N crest)	0.3 - 0.6	0.2 - 0.3	0.05 - 0.1	Isolated	4 areas of settlement	Tier II-7-9	Acceptable	Each area of settlement is associated with a large cobble in the landfill cover. Consistent with previous observation.
		FEATURE D See Figure CAM-5.5 (W cover) - New Obs.	0.4	0.15	0.05	Isolated	Single depression	Tier II-25	Acceptable	Pothole-type depression on cover.
Erosion	Yes	FEATURE E See Figure CAM-5.5 (N and C cover) - New Obs.	6 - 26	0.1	0.02	Occasional	4 x Minor shallow erosion	Tier II-10, 11, 43, 45-47	Acceptable	Shallow linear features orientated NE-SW across facility cover. Possibly associated with final grading.
		FEATURE F See Figure CAM-5.5 (W crest) - New Obs.	1.5	1	0.1	Isolated	Deposition of fines	Tier II-23, 24	Acceptable	Deposition of fine grained material at corner of cover.
Frost Action	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal Burrows		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vegetation		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Staining	Yes	FEATURE C See Figure CAM-5.5 (C cover)	0.4	0.35	N/A	Isolated	Hydrocarbon stain	Tier II-35	Acceptable	Hydrocarbon stain located at the approximate center of the facility. Consistent with previous observation.
Vegetation Stress	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seepage Points	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Debris Exposed	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Presence/Condition of Monitoring Instruments	Yes	N/A	N/A	N/A	N/A	N/A	Thermistors (VT-1 through VT-4) and Groundwater Wells (MW-5 though MW-8)	Tier II-44, 36, 42, 41 Tier II-1, 28, 29, 30	N/A	Monitoring wells and thermistor casings are in good conditicn.
Other Features of Note	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Photographs	Yes	See Figure CAM-5.5 and Photographic Record	N/A	N/A	N/A	N/A	General Photographic record	General Photographic record	N/A	N/A
Overall Landfill Performance	**Acceptable**									

6.2 PRELIMINARY STABILITY ASSESSMENT

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

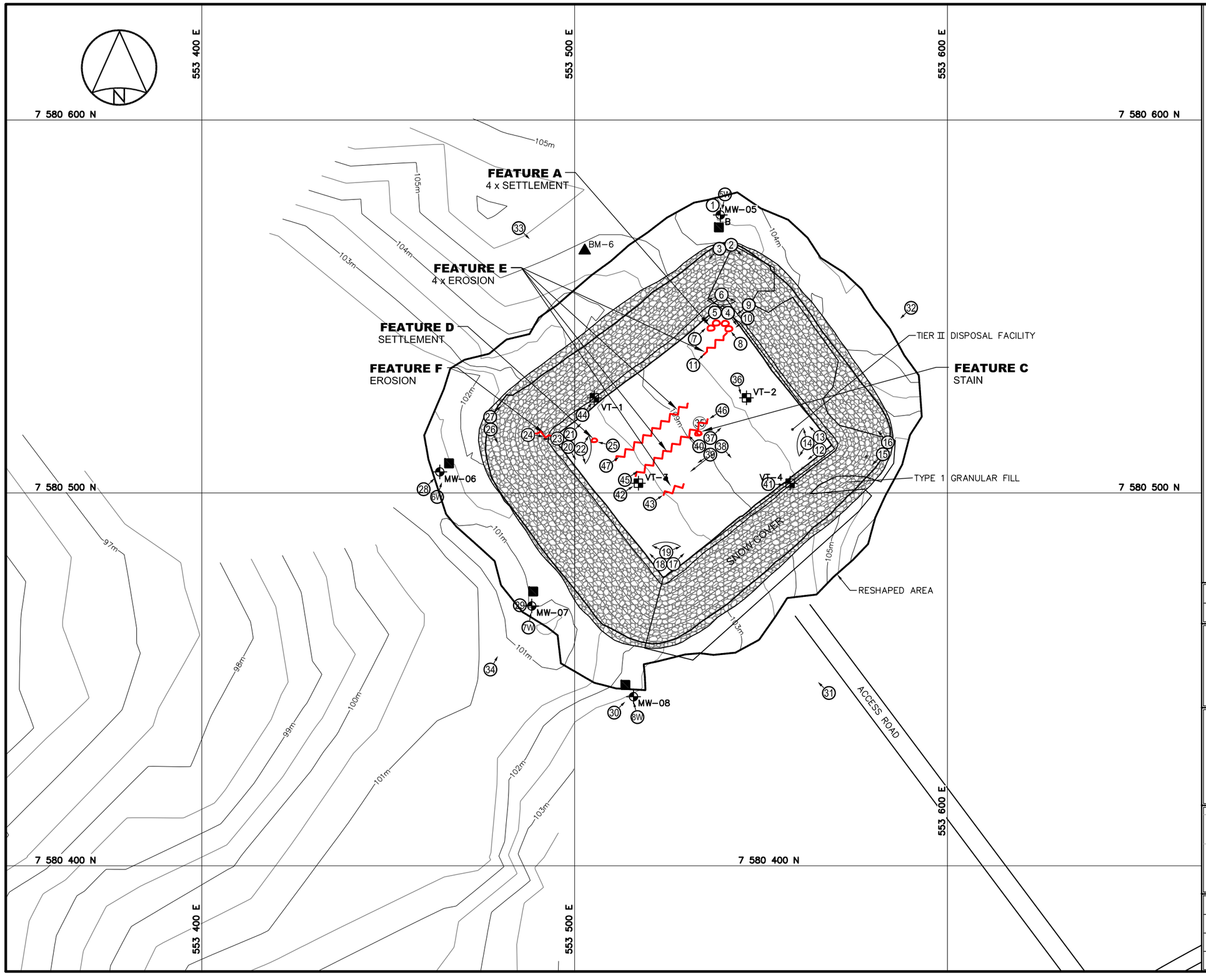
Table XIV: Preliminary Stability Assessment – Tier II Disposal Facility

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

Performance/ Severity Rating	Description
Acceptable	Noted features are of little consequence. The landfill is performing as designed. Minor deviations in environmental or physical performance may be observed, such as isolated areas of erosion, settlement.
Marginal	Physical/environmental performance appears to be deteriorating with time. Observations may include an increase in size or number of features of note, such as differential settlement, erosion or cracking. No significant impact on landfill stability to-date, but potential for failure is assessed as low or moderate.
Significant	Significant or potentially significant changes affecting landfill stability, such as significant changes in slope geometry, significant erosion or differential settlement; scarp development. The potential for failure is assessed as imminent.
Unacceptable	Stability of 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, impacting less than 50% of the surface area of the landfill.
Extensive	Impacting greater than 50% of the surface area of the landfill.

6.3 LOCATION PLAN

The Location Plan for the Tier II Disposal Facility has been completed as per the TOR and is included in the following page as Figure CAM-5.5 Mackar Inlet – Tier II Disposal Facility.



LEGEND

- BM-6 — PERMANENT BENCHMARK LOCATION (1)
- MONITORING WELL LOCATION (3)
- B — BACKGROUND MONITORING WELL LOCATION (1)
- GROUND TEMPERATURE CABLE LOCATION (4)
- MONITORING SOIL SAMPLE LOCATION (4)
- PHOTOGRAPH LOCATION
- SETTLEMENT (NTS)
- STAINING
- EROSION (NTS)

0 10m 20m 30m 40m 50m

NO.	VERSION	DATE	P.L.	A.P.	P.G.
1	FINAL	15-06-26	PAR	VERIF.	APPR.

Construction de Défense Canada
Defence Construction Canada

COLLECTION OF LANDFILL MONITORING DATA

CAM-5, MACKAR INLET, NUNAVUT

TIER II DISPOSAL FACILITY

SITE REMEDIATION SOLUTIONS

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

MEASUREMENT UNIT	SCALE:	DATE (month-year):
Meter	1 : 1,500	JUNE 2015
DRAWN BY: L. LA PIERRE	VERIFIED BY: A. PASSALIS	APPROVED BY: P. GÉLINAS P. Eng
PROJECT NO: CD2655_400_403	DRAWING NO: CD2655_400_403_101-CAM-5.5	PAGE CAM-5.5

FIGURE CAM-5.5

6.4 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 with the exception of VT-3, whose datalogger was re-installed after off-site repairs and maintenance during the 2013 monitoring period. Batteries were also changed in all other dataloggers.

Review of the downloaded thermal data identified all analogues/thermocouples to be functioning properly during the 2014 monitoring period.

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-1 to VT-4) included in this section of the report.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**21/08/2014**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-5**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-1**		Inclination		**Vertical**		
Install Date:	**2010-09-07**		First Date Event		**2012-08-30**	Last Date Event	**2013-08-29**
Coordinates and Elevation	N	**7580525.5**	E	**553505.3**	Elev	**109.1**	
Length of Cable (m)	**10.5**	Cable Lead Above Ground (m)	**3.47**	Nodal Points			**16**
Datalogger Serial #	**7110050**			Cable Serial Number			**VT-10**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date		**2012-08-28**		
Battery Levels	Main	**11.34 V**	Aux	**13.38**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.54	8.9412
2	13.128	4.4729
3	14.715	2.1705
4	15.647	0.9666
5	16.725	-0.3668
6	17.737	-1.5095
7	18.731	-2.6224
8	19.563	-3.4544

Bead	ohms	Degrees C
9	20.29	-4.331
10	20.95	-5.1183
11	21.71	-5.696
12	22.1	-6.0217
13	22.62	-6.5389
14	23.01	-6.9096
15	23.17	-7.1122
16	23.34	-7.2577

Observations and Proposed Maintenance

Download file: Site_050_VT-1_Aug_21_2014

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**21/08/2014**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-5**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-2**	Inclination		**Vertical**			
Install Date:	**2010-09-07**	First Date Event		**2012-08-30**	Last Date Event		**2013-08-29**
Coordinates and Elevation	N	**7580525.5**	E	**553546.1**	Elev	**109.6**	
Length of Cable (m)	**8.25**	Cable Lead Above Ground (m)	**3.00**	Nodal Points			**16**
Datalogger Serial #	**7110073**			Cable Serial Number			**VT-9**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	**x**			
Cover	**x**			
Data Logger	**x**			
Cable	**x**			
Beads	**x**			
Battery Installation Date		**2012-08-28**		
Battery Levels	Main	**11.34 V**	Aux	**13.38**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	12.417	5.5282
2	13.171	4.1909
3	14.153	2.9318
4	15.071	1.6485
5	16.127	0.2898
6	17.079	-0.8172
7	18.84	-0.8172
8	19.79	-2.7857

Bead	ohms	Degrees C
9	20.61	-4.6508
10	20.34	-5.3451
11	22.12	-6.0028
12	22.52	-7.4981
-	-	-
-	-	-
-	-	-
-	-	-

Observations and Proposed Maintenance

Download file: Site_073_VT-2_Aug_21_2014

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**21/08/2014**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-5**		Thermistor Location		**Tier II Disposal Facility**		
Thermistor Number:	**VT-3**		Inclination		**Vertical**		
Install Date:	**2010-09-07**		First Date Event		**2012-08-30**	Last Date Event	**2013-08-29**
Coordinates and Elevation	N	**7580502.6**	E	**553517.1**	Elev	**108.3**	
Length of Cable (m)	**9.25**		Cable Lead Above Ground (m)	**3.53**	Nodal Points		**16**
Datalogger Serial #	**7110076**				Cable Serial Number		**VT-5**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date		**2012-08-28**		
Battery Levels	Main	**11.34 V**	Aux	**13.38**

Manual Ground Temperature Readings

Bead	ohms	Degrees C	Bead	ohms	Degrees C
1	10.013	9.7793	9	19.759	-3.7264
2	10.432	8.9564	10	20.51	-4.5926
3	12.976	4.7099	11	21.23	-5.2703
4	13.9	3.2918	12	21.79	-5.8493
5	14.651	2.2182	13	22.39	-6.395
6	15.771	0.7623	14	22.86	-6.8659
7	16.754	-0.4735	-	-	-
8	18.801	-2.7053	-	-	-

Observations and Proposed Maintenance

Download file: Site_001_default_Aug_27_2014
Datalogger re-installed after off-site servicing/repair. Restart prior to installation.

Thermistor Annual Maintenance Report

Contractor Name:	**Sila Remediation Inc.**	Inspection Date:	**21/08/2014**
Prepared By:	**A.Passalis**		

Thermistor Information

Site Name:	**CAM-5**	Thermistor Location		**Tier II Disposal Facility**			
Thermistor Number:	**VT-4**	Inclination		**Vertical**			
Install Date:	**2010-09-07**	First Date Event		**2012-08-30**	Last Date Event		**2013-08-29**
Coordinates and Elevation	N	**7580502.6**	E	**553557.8**	Elev	**108.5**	
Length of Cable (m)	**10.5**	Cable Lead Above Ground (m)	**3.47**	Nodal Points			**16**
Datalogger Serial #	**7110071**			Cable Serial Number			**VT-8**

Thermistor Inspection

	Good			
	Yes		No	Problem/Maintenance
Casing	x			
Cover	x			
Data Logger	x			
Cable	x			
Beads	x			
Battery Installation Date		**2012-08-28**		
Battery Levels	Main	**11.34 V**	Aux	**13.87**

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10.097	10.2176
2	11.939	6.5693
3	14.083	3.0193
4	15.129	1.6309
5	16.025	0.4492
6	17.223	-0.9447
7	18.293	-2.1652
8	19.3	-3.1702

Bead	ohms	Degrees C
9	20.02	-3.9914
10	20.75	-4.7356
11	21.41	-5.4146
12	22.04	-5.9381
13	22.63	-6.5199
14	22.97	-6.8659
15	23.29	-7.1534
16	23.58	-7.4615

Observations and Proposed Maintenance

Download file: Site_071_VT-4_Aug_21_2014

6.5 PHOTOGRAPHIC RECORDS

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

Table XV: Landfill Visual Inspection Photo Log – Tier II Disposal Facility (page 1 of 2)

Site Name: CAM-5, Mackar Inlet
Landfill: Tier II Disposal Facility (New)
Date Inspected: August 21, 2014
Inspected by: Andrew Passalis, P.Eng.

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
1	C514_2560	4 386	14-08-21	553538	7580575	View of MW-5
2	C514_2561	4 252	14-08-21	553541	7580566	View looking southeast along east toe of Tier II DF
3	C514_2562	4 433	14-08-21	553540	7580565	View looking southwest along north toe of Tier II DF
4	C514_2563	4 398	14-08-21	553540	7580549	View looking southeast along east crest of Tier II DF
5	C514_2564	4 312	14-08-21	553539	7580549	View looking southwest along north crest of Tier II DF
6	C514_2565	1 394	14-08-21	553540	7580551	Panoramic view looking southeast to southwest from north corner of Tier II DF
7	C514_2566	4 431	14-08-21	553533	7580542	View looking northeast at small depression near crest on north corner of Tier II DF - FEATURE A
8	C514_2567	4 363	14-08-21	553543	7580541	View looking northwest at small depression near crest on north corner of Tier II DF - FEATURE A
9	C514_2568	4 398	14-08-21	553545	7580549	View looking southwest at small depression near crest on north corner of Tier II DF - FEATURE A
10	C514_2569	4 326	14-08-21	553545	7580546	View looking southwest at minor erosion on north cover of Tier II DF - FEATURE E
11	C514_2570	4 363	14-08-21	553533	7580536	View looking northeast at minor erosion on north cover of Tier II DF - FEATURE E
12	C514_2571	4 383	14-08-21	553567	7580512	View looking southwest along south crest of Tier II DF
13	C514_2572	4 342	14-08-21	553567	7580514	View looking northwest along east crest of Tier II DF
14	C514_2573	1 297	14-08-21	553563	7580513	Panoramic view looking north to southwest from east corner of Tier II DF
15	C514_2574	4 407	14-08-21	553584	7580511	View looking southwest along south toe of Tier II DF
16	C514_2575	4 265	14-08-21	553584	7580512	View looking northwest along east toe of Tier II DF
17	C514_2576	4 283	14-08-21	553526	7580480	View looking northeast along south crest of Tier II DF
18	C514_2577	4 419	14-08-21	553524	7580480	View looking southwest along west crest of Tier II DF
19	C514_2578	1 288	14-08-21	553524	7580483	Panoramic view looking east to northwest from south corner of Tier II DF
20	C514_2579	4 331	14-08-21	553498	7580513	View looking southeast along west crest of Tier II DF
21	C514_2580	4 377	14-08-21	553498	7580515	View looking northeast along north crest of Tier II DF
22	C514_2581	1 424	14-08-21	553501	7580513	Panoramic view looking northwest to south from west corner of Tier II DF
23	C514_2582	4 385	14-08-21	553495	7580514	View looking west at deposition of fines on west corner of Tier II DF - FEATURE F
24	C514_2583	4 354	14-08-21	553489	7580515	View looking east at deposition of fines on west corner of Tier II DF - FEATURE F
25	C514_2584	4 280	14-08-21	553509	7580513	View looking west-northwest at minor depression on west cover of Tier II DF - FEATURE D

Table XV: Landfill Visual Inspection Photo Log – Tier II Disposal Facility (page 2 of 2)

Photo (Tier II-)	Filename	Size (KB)	Date	Vantage Point		Caption
				Easting	Northing	
26	C514_2585	4 280	14-08-21	553477	7580517	View looking southeast along west toe of Tier II DF
27	C514_2586	4 413	14-08-21	553477	7580519	View looking northeast along north toe of Tier II DF
28	C514_2587	4 293	14-08-21	553461	7580502	View looking northeast at MW-6
29	C514_2589	4 345	14-08-21	553487	7580470	View looking east of MW-7
30	C514_2590	4 351	14-08-21	553512	7580442	View looking northeast at MW-8
31	C514_2591	4 433	14-08-21	553568	7580447	View looking northeast at south side of Tier II DF
32	C514_2592	4 259	14-08-21	553590	7580549	View looking southwest at east side of Tier II DF
33	C514_2595	4 395	14-08-21	553485	7580571	View looking southeast at north side of Tier II DF
34	C514_2600	4 420	14-08-21	553477	7580454	View looking northeast at west side of Tier II DF
35	C514_2603	4 471	14-08-21	553534	7580518	View of small stain on central cover area of Tier II DF - FEATURE C
36	C514_2604	4 286	14-08-21	553544	7580530	View looking south at VT-2
37	C514_2605	4 299	14-08-21	553537	7580514	View looking northeast from central cover
38	C514_2606	4 326	14-08-21	553538	7580513	View looking southeast from central cover
39	C514_2607	4 295	14-08-21	553536	7580512	View looking southwest from central cover
40	C514_2608	4 405	14-08-21	553535	7580513	View looking northwest from central cover
41	C514_2609	4 400	14-08-21	553553	7580502	View looking east at VT-4
42	C514_2610	4 351	14-08-21	553513	7580500	View looking northeast at VT-3
43	C514_2611	4 316	14-08-21	553521	7580498	View looking northeast at minor erosion on west cover of Tier II DF - FEATURE E
44	C514_2612	4 386	14-08-21	553503	7580522	View looking northeast at VT-1
45	C514_2613	4 396	14-08-21	553515	7580504	View looking northeast at minor erosion on central cover - FEATURE E
46	C514_2614	4 450	14-08-21	553539	7580522	View looking southwest at minor erosion on central cover - FEATURE E
47	C514_2615	4 291	14-08-21	553509	7580508	View looking southwest at minor erosion on central cover - FEATURE E
Soil Sampling						
MW5	C514_2593	4 404	14-08-21	553539	7580572	Sampling location C514-1W located upgradient of Tier II DF
5W	C514_2594	4 301	14-08-21	553540	7580579	View looking east at MW-01 located upgradient of Tier II DF
MW6	C514_2596	4 347	14-08-21	553466	7580507	Sampling location C514-2W located downgradient of Tier II DF
6W	C514_2597	4 368	14-08-21	553463	7580500	View looking southwest at MW-02 located downgradient of Tier II DF
MW7	C514_2598	4 327	14-08-21	553489	7580473	Sampling location C514-3W located downgradient of Tier II DF
7W	C514_2599	4 401	14-08-21	553488	7580465	View looking south at MW-03 located downgradient of Tier II DF
MW8	C514_2601	4 318	14-08-21	553514	7580448	Sampling location C514-4W located downgradient of Tier II DF
8W	C514_2602	4 418	14-08-21	553517	7580441	View looking east at MW-04 located downgradient of Tier II DF

6.6 SOIL SAMPLE ANALYTICAL DATA

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

Table XVI: 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															
C514-5WA	MW-05	0-15	0.2	0.01	4.6	2.2	3.1	<4.9	3.0	14	<0.01	<0.1	<10	<50	<50
C514-5WB		40-50	0.2	0.03	3.9	2.8	5.9	<5	6.1	18	<0.01	<0.1	<10	<50	<50
Downgradient Soil Samples															
C514-6WA	MW-06	0-15	<0.2	0.02	3.1	2.3	2.2	<4.9	2.9	15	<0.01	<0.1	<10	<50	<50
C514-6WB		40-50	<0.2	<0.01	3.0	2.3	5.0	<5	3.1	12	<0.01	<0.1	<10	<50	<50
C514-7WA	MW-07	0-15	0.7	<0.01	15.4	3.7	8.6	7.3	11.4	22	<0.01	<0.1	<10	<50	<50
C514-7WB		40-50	0.2	<0.01	6.2	3.2	6.7	<4.9	7.7	20	<0.01	<0.1	<10	<50	<50
C514-8WA	MW-08	0-15	<0.2	<0.01	3.7	2.7	6.1	<5	8.1	16	<0.01	<0.1	<10	<50	<50
C514-8WB		40-50	0.2	<0.01	4.6	3.2	7.4	<4.9	4.5	17	<0.01	<0.1	<10	<50	<50

6.7 GROUNDWATER SAMPLE ANALYTICAL DATA

The groundwater chemical analysis results for the 2014 Tier II Disposal Facility samples are presented in Table XVII hereafter. Certificates of analysis and results for groundwater samples collected as part of the QA/QC program are presented in Annexes 1 and 2. Samples were collected from MW-8. MW-5 and MW-7 were dry at the time of monitoring and MW-6 contained insufficient water to collect a sample. Although requested on the chain-of-custody, Exova did not perform mercury analysis in sample collected at MW-08. QA sample was sent to Maxxam. Result is presented in Table XVII below.

Table XVII: Tier II Summary Table for Groundwater Analytical Data

Sample #	Location	Parameters										F1	F2	F3
		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 [ug/L]	PCBs [ug/L]	C_6-C_{10} [mg/L]	C_{10}-C_{16} [mg/L]	C_{10}-C_{34} [mg/L]
Detection Limit		0.0002	0.00001	0.0005	0.0001	0.001	0.0001	0.0005	0.001	0.02*	0.1	0.1	0.1	0.1
Upgradient Groundwater Sample														
C514-5W	MW-05	- Well Dry -												
Downgradient Groundwater Samples														
C514-6W	MW-06	Insufficient Water												
C514-7W	MW-07	- Well Dry -												
C514-8W	MW-08	0.0040	0.00005	0.0678	0.0158	0.092	0.0118	0.0485	0.092	<0.02*	<0.1	<0.1	<0.1	<0.1

*: Detection limit and result from Maxxam

6.8 MONITORING WELL SAMPLING / INSPECTION LOGS

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

Development of Monitoring Wells

Site Name:	**CAM-5**	**Mackar Inlet**	**Nunavut**
Date of Sampling Event:	2014-08-21	Time:	12:15
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-5		
Sample Number:	N/A (dry)		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	54		
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)	191	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 (deg C)=	N/A		

Development of Monitoring Wells

Site Name:	**CAM-5**	**Mackar Inlet**	**Nunavut**
Date of Sampling Event:	2014-08-21	Time:	12:45
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	63		
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)	208	Measurement method: (meter, tape, etc.)	Interface Meter
Static water level (cm)= (below ground surface)	145		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	211	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 (deg C)=	N/A		

Development of Monitoring Wells

Site Name:	**CAM-5**	**Mackar Inlet**	**Nunavut**
Date of Sampling Event:	2014-08-21	Time:	12:55
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-7		
Sample Number:	N/A (dry)		
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)	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)	169	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 (deg C)=	N/A		

Development of Monitoring Wells

Site Name:	**CAM-5**	**Mackar Inlet**	**Nunavut**
Date of Sampling Event:	2014-08-21	Time:	12:55
Names of Samplers:	A.Passalis		
Landfill Name:	Tier II Disposal Facility		
Monitoring Well ID:	MW-8		
Sample Number:	C514-8W	(dup: C514-BDW1)	
Condition of Well:	Good		
Measured Data			
Well pipe height above ground	69		
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)	205	Measurement method: (meter, tape, etc.)	Interface Meter
Static water level (cm)= (below ground surface)	136		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	232	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	27		
Static volume of water in well (mL)=	339		
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=	500 mL		
Decontamination required: (Y/N)	N, dedicated		
Number washes:	N/A		
Number rinses:	N/A		
Final pH=	8.6		
Final Conductivity (uS/cm)=	441		
Final Temperature (deg C)=	2.4		

ANNEX 1

Laboratory Results

Jean-Pierre Pelletier

De: Angela Lyster <Angela.Lyster@exova.com>
Envoyé: 28 février 2015 10:42
À: Jean-Pierre Pelletier
Objet: RE: TR: SIF report - Cambridge Bay Project
Pièces jointes: SIF CAM-5.pdf; Lot notes CAM-5.pdf; Confirmation of Analysis - Lot 1023071.pdf; COC - Lot 1023071.pdf

Hi Jean-Pierre,

I printed the report for CAM-5, but it's showing up blank because there were no sample non-conformances (see attached). I have also attached the lot notes for CAM-5, as well as the COC and COA.

If you need something else from this report, please let me know. I can work with our IT department to develop something a little different.

Thanks,
Angela

Angela Lyster
Client Services Manager, Western Canada
Exova Canada
403-827-1316
angela.lyster@exova.com

-----Original Message-----
From: Jean-Pierre Pelletier [mailto:Jean-Pierre.Pelletier@lvm.ca]
Sent: Saturday, February 28, 2015 9:02 AM
To: Angela Lyster
Subject: RE: TR: SIF report - Cambridge Bay Project

Good morning Angela,

Could you make it Monday? It is the last piece missing for a report I have to wrap up.

Thx

SVP prendre note du nouveau numéro de téléphone/poste et de bureau / Please take note of my new phone/extension and office suite number

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

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

Sample Integrity Scorecard

* is a non-conformance

Notes on lot for CAM-5

Received extra sample C514-BD1.

Report was issued to correct for missing Mercury analysis on samples 1023071 (9 and 10) . Previous report 1943938.

As per credit request dated Nov 11/14 from Angela Lyster credit 14-830425 and reissue with updated price for the CCMEC Service,

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

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

Confirmation of Service Request

Lot ID: **1023071**
Number of Samples: 11
Printed Date: Nov 19, 2014

Please verify the following service request. If you have corrections or questions, please contact Client Services.

Main Contact:	***Primary Administrator:***	***Invoice Delivery To:***	***Bill Paid by:***
Attn: Jean-Pierre Pelletier	Attn: Jean-Pierre Pelletier	Attn: Accounts Payable	Attn: Jean-Pierre Pelletier
SILA Remediation	SILA Remediation	SILA Remediation	SILA Remediation
250-1260 Boul Lebourgneuf	250-1260 Boul Lebourgneuf	350, rue Franquet	250-1260 Boul Lebourgneuf
Quebec, QC G2K 2G2	Quebec, QC G2K 2G2	Sainte-Foy, QC G1P 4P3	Quebec, QC G2K 2G2
Phone: (581) 984-2585	Phone: (581) 984-2585	Phone: (418) 653-4422	Phone: (581) 984-2585
Fax:	Fax:	Fax: (418) 653-3583	Fax:

Agreement Id	105540	**Well Name**	
Project Id	CAM-5 2014	**Well Location**	
Project Name	2014 LFM	**Field**	
Project Location	Mackar Inlet	**Formation**	
Project Legal		**Elevation KB**	
PO#		**Elevation GR**	
Proj. Acct. Code	14.071.309663	**Drilling License**	
Control Id	C0042763	**Sampled By**	A. Passalis
Report Due	Oct 08, 2014	**Sampling Company**	Sila
Received Date	Aug 28, 2014	**Est. Disposal Date**	Nov 07, 2014

Service Information

Sample Id **1** **4837192**

Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-5WA

Service		Service Name
05		Drying and Grinding
PCB2	**B**	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id **2** **4837193**

Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-5WB

Service		Service Name
05		Drying and Grinding
PCB2	**B**	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id **3** **4837194**

Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-6WA

Service		Service Name
05		Drying and Grinding
PCB2	**B**	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id **4** **4837195**

Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-6WB

Service		Service Name
05		Drying and Grinding
PCB2	**B**	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

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Confirmation of Service Request

Lot ID: **1023071**
Number of Samples: 11
Printed Date: Nov 19, 2014

Please verify the following service request. If you have corrections or questions, please contact Client Services.

Sample Id	5 4837196
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-7WA

Service		Service Name
05		Drying and Grinding
PCB2	B	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id	6 4837197
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-7WB

Service		Service Name
05		Drying and Grinding
PCB2	B	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id	7 4837198
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-8WA

Service		Service Name
05		Drying and Grinding
PCB2	B	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id	8 4837199
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-8WB

Service		Service Name
05		Drying and Grinding
PCB2	B	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Sample Id	9 4837200
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-8W

Service		Service Name
HG		Total Hg
TW22		Total metals - water
PCB3	B	PCBs in water
DISP		Environmental Disposal Fee
CCMEW-E		CCME BTEX, F1,F2, F3 in water by GC/FID/MSD

Sample Id	10 4837201
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-BDW1

Service		Service Name
HG		Total Hg
TW22		Total metals - water
PCB3	B	PCBs in water
DISP		Environmental Disposal Fee
CCMEW-E		CCME BTEX, F1,F2, F3 in water by GC/FID/MSD

Sample Id	11 4837290
Date Sampled	08-21-2014
Priority	Normal
Sample Description	C514-BD1

Service		Service Name
05		Drying and Grinding
PCB2	B	PCBs in soil or sediments
DISP		Environmental Disposal Fee
TT44-noB		CCME metals in soil no HWS Boron
CCMEC-E		CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction

Other Billable Services

Service	Service Name	Quantity
05	Drying and Grinding	9.00
CCMEC-E	CCME Hydrocarbons: BTEX, F1-F4 in Soil	9.00

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Confirmation of Service Request

Lot ID: **1023071**
Number of Samples: 11
Printed Date: Nov 19, 2014

Please verify the following service request. If you have corrections or questions, please contact Client Services.

CCMEC-E	CCME Hydrocarbons: BTEX, F1-F4 in Soil	9.00
CCMEW-E	CCME BTEX, F1,F2, F3 in water by	2.00
CCMEW-E	CCME BTEX, F1,F2, F3 in water by	2.00
DISP	Environmental Disposal Fee	11.00
DISP	Environmental Disposal Fee	11.00
PCB2	PCBs in soil or sediments	9.00
PCB2	PCBs in soil or sediments	9.00
PCB3	PCBs in water	2.00
PCB3	PCBs in water	2.00
TT44-noB	CCME metals in soil no HWS Boron	9.00
TT44-noB	CCME metals in soil no HWS Boron	9.00
TW22	Total metals - water	2.00
TW22	Total metals - water	2.00

Sample Service Count

Service Name	Service Code	Service Quantity
CCME BTEX, F1,F2, F3 in water by GC/FID/MSD	CCMEW-E	2
CCME Hydrocarbons: BTEX, F1-F4 in Soil by Cold Extraction	CCMEC-E	9
CCME metals in soil no HWS Boron	TT44-noB	9
Drying and Grinding	05	9
Environmental Disposal Fee	DISP	11
PCBs in soil or sediments	PCB2	9
PCBs in water	PCB3	2
Total Hg	HG	2
Total metals - water	TW22	2

Notes

Report was issued to correct for missing Mercury analysis on samples 1023071 (9 and 10) . Previous report 1943938

If required for invoice approval, please sign and return to the address indicated at the top of the page.

(Signature) _____

Report Delivery Plan

Contact	Company	Address
Andrew Passalis	SILA Remediation	350, rue Franquet Sainte-Foy, QC G1P 4P3 Phone: (204) 791-4938 Fax: (418) 653-3583 Email: andrew.passalis@gmail.com

Copies	Delivery	Format
1	Email - Single Report	PDF

Contact	Company	Address
Jean-Pierre Pelletier	SILA Remediation	250-1260 Boul Lebourgneuf Quebec, QC G2K 2G2 Phone: (581) 984-2585 Fax: Email: jean-peirre.pelletier@lvm.ca

Copies	Delivery	Format
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Report Transmission Cover Page

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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 (COC, Test Report) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report

Notes To Clients:

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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Reference Number	1023071-1	1023071-2	1023071-3
Sample Date	Aug 21, 2014	Aug 21, 2014	Aug 21, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C514-5WA	C514-5WB	C514-6WA
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	0.2	0.2	<0.2	0.2
Barium	Strong Acid Extractable	mg/kg	11	20	12	1
Beryllium	Strong Acid Extractable	mg/kg	0.1	0.1	0.1	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.01	0.03	0.02	0.01
Chromium	Strong Acid Extractable	mg/kg	4.6	3.9	3.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.2	2.8	2.3	0.1
Copper	Strong Acid Extractable	mg/kg	3.1	5.9	2.2	1
Lead	Strong Acid Extractable	mg/kg	<4.9	<5.0	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	3.0	6.1	2.9	0.5
Selenium	Strong Acid Extractable	mg/kg	<0.3	<0.3	<0.3	0.3
Silver	Strong Acid Extractable	mg/kg	0.3	0.5	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	0.06	0.05	<0.05	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	10.2	9.9	7.4	0.1
Zinc	Strong Acid Extractable	mg/kg	14	18	15	1
Physical and Aggregate Properties						
Moisture	Wet Weight @ 105°C	%	6.4	7.5	6.8	0.1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		28-Aug-14	28-Aug-14	28-Aug-14	
Benzene	Dry Weight	mg/kg	<0.005	<0.005	<0.005	0.005
Toluene	Dry Weight	mg/kg	<0.02	<0.03	<0.02	0.02
Ethylbenzene	Dry Weight	mg/kg	<0.01	<0.01	<0.01	0.01
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
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	
Silica Gel Cleanup			Done	Done	Done	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50

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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

		Reference Number	1023071-1	1023071-2	1023071-3
		Sample Date	Aug 21, 2014	Aug 21, 2014	Aug 21, 2014
		Sample Time	NA	NA	NA
		Sample Location			
		Sample Description	C514-5WA	C514-5WB	C514-6WA
		Matrix	Soil	Soil	Soil
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
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	%	100	110	100	50-150

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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Reference Number	1023071-4	1023071-5	1023071-6
Sample Date	Aug 21, 2014	Aug 21, 2014	Aug 21, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C514-6WB	C514-7WA	C514-7WB
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	<0.2	0.7	0.2	0.2
Barium	Strong Acid Extractable	mg/kg	13	28	29	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	3.0	15.4	6.2	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.3	3.7	3.2	0.1
Copper	Strong Acid Extractable	mg/kg	5.0	8.6	6.7	1
Lead	Strong Acid Extractable	mg/kg	<5.0	7.3	<4.9	5
Molybdenum	Strong Acid Extractable	mg/kg	<1.0	<1.0	<1.0	1
Nickel	Strong Acid Extractable	mg/kg	3.1	11.4	7.7	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	0.1	0.1
Thallium	Strong Acid Extractable	mg/kg	<0.05	0.08	0.07	0.05
Tin	Strong Acid Extractable	mg/kg	3.4	7.9	4.1	1
Uranium	Strong Acid Extractable	mg/kg	1.2	0.9	0.8	0.5
Vanadium	Strong Acid Extractable	mg/kg	8.0	17.3	11.9	0.1
Zinc	Strong Acid Extractable	mg/kg	12	22	20	1
Physical and Aggregate Properties						
Moisture	Wet Weight @ 105°C	%	2.1	3.7	2.2	0.1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		28-Aug-14	28-Aug-14	28-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	<0.01	<0.01	<0.01	0.01
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
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	
Silica Gel Cleanup			Done	Done	Done	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50

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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

		Reference Number	1023071-4	1023071-5	1023071-6	
		Sample Date	Aug 21, 2014	Aug 21, 2014	Aug 21, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C514-6WB	C514-7WA	C514-7WB	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
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	130	120	50-150

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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Reference Number	1023071-7	1023071-8	1023071-11
Sample Date	Aug 21, 2014	Aug 21, 2014	Aug 21, 2014
Sample Time	NA	NA	NA
Sample Location			
Sample Description	C514-8WA	C514-8WB	C514-BD1
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	<0.2	0.2	0.2	0.2
Barium	Strong Acid Extractable	mg/kg	19	19	21	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	3.7	4.6	5.1	0.5
Cobalt	Strong Acid Extractable	mg/kg	2.7	3.2	2.9	0.1
Copper	Strong Acid Extractable	mg/kg	6.1	7.4	5.3	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	8.1	4.5	6.8	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	0.05	0.06	0.06	0.05
Tin	Strong Acid Extractable	mg/kg	3.5	3.6	3.4	1
Uranium	Strong Acid Extractable	mg/kg	<0.5	0.6	0.6	0.5
Vanadium	Strong Acid Extractable	mg/kg	9.1	11.5	10.9	0.1
Zinc	Strong Acid Extractable	mg/kg	16	17	17	1
Physical and Aggregate Properties						
Moisture	Wet Weight @ 105°C	%	1.7	2.7	2.0	0.1
Mono-Aromatic Hydrocarbons - Soil						
Extraction Date	Volatiles		28-Aug-14	28-Aug-14	28-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	<0.01	<0.01	<0.01	0.01
Total Xylenes (m,p,o)	Dry Weight	mg/kg	<0.03	<0.03	<0.03	0.03
Volatile Petroleum Hydrocarbons - Soil						
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	
Silica Gel Cleanup			Done	Done	Done	
F2c C10-C16	Dry Weight	mg/kg	<50	<50	<50	50

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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

		Reference Number	1023071-7	1023071-8	1023071-11	
		Sample Date	Aug 21, 2014	Aug 21, 2014	Aug 21, 2014	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	C514-8WA	C514-8WB	C514-BD1	
		Matrix	Soil	Soil	Soil	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Extractable Petroleum Hydrocarbons - Soil - Continued						
F3c C16-C34	Dry Weight	mg/kg	<50	<50	<50	50
F4c C34-C50	Dry Weight	mg/kg	<100	<100	<100	100
F4HTGCc C34-C50+	Dry Weight	mg/kg	<100	<100	<100	100
% C50+		%	<5	<5	<5	
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

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	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Reference Number		1023071-9	1023071-10
Sample Date		Aug 21, 2014	Aug 21, 2014
Sample Time		NA	NA
Sample Location			
Sample Description		C514-8W	C514-BDW1
Matrix		Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total						
Aluminum	Total	mg/L	26.3	27.7		0.02
Calcium	Total	mg/L	6.7	6.9		0.2
Iron	Total	mg/L	31.5	33.1		0.05
Magnesium	Total	mg/L	15.6	16.2		0.2
Manganese	Total	mg/L	0.478	0.497		0.005
Potassium	Total	mg/L	14.1	14.6		0.4
Silicon	Total	mg/L	43.5	45.4		0.05
Sodium	Total	mg/L	69.9	70.9		0.4
Sulfur	Total	mg/L	8.3	8.4		0.3
Antimony	Total	mg/L	<0.0002	<0.0002		0.0002
Arsenic	Total	mg/L	0.0040	0.0042		0.0002
Barium	Total	mg/L	0.180	0.190		0.001
Beryllium	Total	mg/L	0.0008	0.0007		0.0001
Bismuth	Total	mg/L	<0.0005	<0.0005		0.0005
Boron	Total	mg/L	0.148	0.144		0.002
Cadmium	Total	mg/L	0.00005	0.00006		0.00001
Chromium	Total	mg/L	0.0678	0.0762		0.0005
Cobalt	Total	mg/L	0.0158	0.0162		0.0001
Copper	Total	mg/L	0.092	0.095		0.001
Lead	Total	mg/L	0.0118	0.0119		0.0001
Lithium	Total	mg/L	0.035	0.036		0.001
Molybdenum	Total	mg/L	0.007	0.007		0.001
Nickel	Total	mg/L	0.0485	0.0520		0.0005
Selenium	Total	mg/L	0.0031	0.0031		0.0002
Silver	Total	mg/L	0.00068	0.00167		0.00001
Strontium	Total	mg/L	0.077	0.080		0.001
Thallium	Total	mg/L	0.00027	0.00027		0.00005
Tin	Total	mg/L	<0.001	<0.001		0.001
Titanium	Total	mg/L	1.64	1.72		0.0005
Uranium	Total	mg/L	0.0063	0.0063		0.0005
Vanadium	Total	mg/L	0.0582	0.0602		0.0001
Zinc	Total	mg/L	0.092	0.093		0.001
Zirconium	Total	mg/L	0.004	0.004		0.001
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001		0.001
Toluene		mg/L	<0.0005	<0.0005		0.0005

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	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

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Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Reference Number		1023071-9	1023071-10
Sample Date		Aug 21, 2014	Aug 21, 2014
Sample Time		NA	NA
Sample Location			
Sample Description		C514-8W	C514-BDW1
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	<0.002	<0.002		0.002
Volatile Petroleum Hydrocarbons - Water						
F1 C6-C10		mg/L	<0.1	<0.1		0.1
F1 -BTEX		mg/L	<0.1	<0.1		0.1
Extractable Petroleum Hydrocarbons - Water						
F2 C10-C16		mg/L	<0.1	<0.1		0.1
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	%	61	65		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.

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	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Hot Water Soluble

Blanks	Units	Measured	Lower Limit	Upper Limit		Passed QC
Boron	mg/L	0.0071	-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	<0.20	<0.20	10	0.10	yes
Date Acquired:	August 29, 2014					
Control Sample	**Units**	**Measured**	**Lower Limit**	**Upper Limit**		**Passed QC**
Boron	mg/kg	1.52	1.07	2.05		yes
Date Acquired:	August 29, 2014					
Boron	mg/kg	0.09	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	0.05	-0.07	0.13		yes
Antimony	ug/L	0.127	-0.1	0.2		yes
Arsenic	ug/L	0.027	-0.2	0.2		yes
Barium	ug/L	0.061	-1	1		yes
Beryllium	ug/L	0.004	-0.1	0.1		yes
Cadmium	ug/L	-0.008	-0.01	0.01		yes
Chromium	ug/L	0.052	-0.5	0.5		yes
Cobalt	ug/L	0.005	-0.1	0.1		yes
Copper	ug/L	0.109	-0.6	1.2		yes
Lead	ug/L	0.017	-5.0	5.0		yes
Molybdenum	ug/L	0.059	-1.0	1.0		yes
Nickel	ug/L	0.117	-0.4	0.7		yes
Selenium	ug/L	-0.015	-0.3	0.3		yes
Silver	ug/L	0.121	-0.09	0.14		yes
Thallium	ug/L	-0.012	-0.04	0.04		yes
Tin	ug/L	4.107	0.0	7.2		yes
Uranium	ug/L	0.006	-0.5	0.5		yes
Vanadium	ug/L	0.005	-0.1	0.1		yes
Zinc	ug/L	0.234	-1	1		yes
Date Acquired:	September 02, 2014					
Client Sample Replicates	**Units**	**Replicate 1**	**Replicate 2**	**% RSD Criteria**	**Absolute Criteria**	**Passed QC**
Mercury	mg/kg	0.04	0.04	10	0.03	yes
Antimony	mg/kg	<0.2	<0.2	20	0.4	yes
Arsenic	mg/kg	2.3	2.2	20	0.4	yes
Barium	mg/kg	36	37	20	2	yes
Beryllium	mg/kg	0.4	0.3	20	0.2	yes
Cadmium	mg/kg	0.01	0.02	20	0.02	yes
Chromium	mg/kg	11.6	11.6	20	1.1	yes

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	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Metals Strong Acid Digestion - Continued

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Cobalt	mg/kg	4.9	4.3	20	0.2	yes
Copper	mg/kg	6.6	6.8	20	2.2	yes
Lead	mg/kg	8.1	7.4	20	0.2	yes
Molybdenum	mg/kg	<1.0	<1.0	20	2.2	yes
Nickel	mg/kg	7.9	8.5	20	1.1	yes
Selenium	mg/kg	<0.3	<0.3	20	0.7	yes
Silver	mg/kg	0.3	0.2	20	0.22	yes
Thallium	mg/kg	0.15	0.14	20	0.11	yes
Tin	mg/kg	2.9	3.0	20	2.2	yes
Uranium	mg/kg	0.7	0.7	20	1.1	yes
Vanadium	mg/kg	21.0	20.3	20	0.2	yes
Zinc	mg/kg	18	17	20	2	yes
Date Acquired:	September 02, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	mg/kg	0.30	0.28	0.34	yes
Antimony	mg/kg	39.4	36.1	43.9	yes
Arsenic	mg/kg	40.7	36.7	44.3	yes
Barium	mg/kg	192	185	215	yes
Beryllium	mg/kg	19.4	17.4	22.2	yes
Cadmium	mg/kg	2.09	1.80	2.20	yes
Chromium	mg/kg	100	92.2	105.8	yes
Cobalt	mg/kg	21.2	18.5	22.5	yes
Copper	mg/kg	201	176.3	207.3	yes
Lead	mg/kg	21.0	18.6	21.8	yes
Molybdenum	mg/kg	196	172.6	215.4	yes
Nickel	mg/kg	99.8	90.6	107.4	yes
Selenium	mg/kg	37.2	36.1	42.9	yes
Silver	mg/kg	20.2	16.69	21.97	yes
Thallium	mg/kg	10.3	9.57	11.23	yes
Tin	mg/kg	189	171.9	201.9	yes
Uranium	mg/kg	102	90.3	108.0	yes
Vanadium	mg/kg	18.4	16.3	20.3	yes
Zinc	mg/kg	201	180	220	yes
Date Acquired:	September 02, 2014				
Mercury	mg/kg	0.08	0.05	0.11	yes
Date Acquired:	September 02, 2014				
Mercury	mg/kg	0.28	0.15	0.42	yes
Antimony	mg/kg	0.6	0.3	1.1	yes
Arsenic	mg/kg	80.4	65.9	97.9	yes
Barium	mg/kg	247	213	270	yes
Beryllium	mg/kg	0.6	0.5	0.9	yes

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Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Metals Strong Acid Digestion - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Cadmium	mg/kg	1.87	1.50	2.64	yes
Chromium	mg/kg	33.2	27.4	39.2	yes
Cobalt	mg/kg	13.6	11.3	16.0	yes
Copper	mg/kg	187	162.7	222.9	yes
Lead	mg/kg	119	99.6	135.6	yes
Molybdenum	mg/kg	2.6	2.0	3.8	yes
Nickel	mg/kg	57.0	47.1	73.5	yes
Selenium	mg/kg	0.6	0.3	1.3	yes
Silver	mg/kg	0.7	0.25	1.15	yes
Thallium	mg/kg	0.32	0.26	0.40	yes
Tin	mg/kg	3.2	1.0	5.4	yes
Uranium	mg/kg	1.2	0.9	1.5	yes
Vanadium	mg/kg	39.4	31.5	56.1	yes
Zinc	mg/kg	465	355	550	yes

Date Acquired: September 02, 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

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Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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

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Quality Control

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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

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	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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

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	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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

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Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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				

Physical and Aggregate Properties

Client Sample Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Moisture	%	2.7	2.6	10	0.3	yes
Date Acquired:	August 29, 2014					

Mono-Aromatic Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	ng	0	-1.650	1.650	yes
Toluene	ng	2.04	-8.01	8.01	yes
Ethylbenzene	ng	0	-3.99	3.99	yes
m,p-Xylene	ng	0	-3.99	3.99	yes
o-Xylene	ng	0	-3.99	3.99	yes
Date Acquired:	August 28, 2014				

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	mg/kg	0.783	0.852	20	0.004	yes
Toluene	mg/kg	0.80	0.86	20	0.01	yes
Ethylbenzene	mg/kg	0.81	0.87	20	0.01	yes
m,p-Xylene	mg/kg	1.62	1.74	20	0.01	yes
o-Xylene	mg/kg	0.81	0.88	20	0.01	yes
Date Acquired:	August 28, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	mg/kg	1.20	1.063	1.438	yes
Toluene	mg/kg	1.24	1.06	1.44	yes

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	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Mono-Aromatic Hydrocarbons - Soil - Continued

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Ethylbenzene	mg/kg	1.23	1.06	1.44	yes
m,p-Xylene	mg/kg	2.45	2.12	2.88	yes
o-Xylene	mg/kg	1.24	1.06	1.44	yes
Date Acquired:	August 28, 2014				

Mono-Aromatic Hydrocarbons - Water

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Benzene	mg/L	0.025	0.023	20	0.002	yes
Toluene	mg/L	0.0248	0.0234	20	0.0020	yes
Ethylbenzene	mg/L	0.025	0.024	20	0.002	yes
m,p-Xylene	mg/L	0.046	0.042	20	0.002	yes
o-Xylene	mg/L	0.026	0.025	20	0.002	yes
Date Acquired:	August 28, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Benzene	mg/L	0.048	0.042	0.058	yes
Toluene	mg/L	0.0495	0.0425	0.0575	yes
Ethylbenzene	mg/L	0.049	0.042	0.058	yes
m,p-Xylene	mg/L	0.098	0.085	0.115	yes
o-Xylene	mg/L	0.049	0.042	0.058	yes
Date Acquired:	August 28, 2014				

Volatile Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
F1 C6-C10	ng	514.12	-1599	1599	yes
Date Acquired:	August 28, 2014				

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
F1 C6-C10	mg/kg	17	20	20	4	yes
Date Acquired:	August 28, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
F1 C6-C10	mg/kg	19	14	21	yes
Date Acquired:	August 28, 2014				

Volatile Petroleum Hydrocarbons - Water

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
F1 C6-C10	mg/L	0.8	0.6	0.8	yes
Date Acquired:	August 28, 2014				

Extractable Petroleum Hydrocarbons - Soil

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC

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	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
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Report Number:	1943938

Extractable Petroleum Hydrocarbons - Soil

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
F2c C10-C16	mg/kg	226	213	30	20	yes
F3c C16-C34	mg/kg	857	803	30	20	yes
F4c C34-C50	mg/kg	256	233	30	30	yes
F4c+ C50+	mg/kg	<100	<100	30	20	yes
Date Acquired:	August 28, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
F2c C10-C16	mg/kg	82	79	121	yes
F3c C16-C34	mg/kg	125	122	158	yes
F4c C34-C50	mg/kg	189	170	230	yes
Date Acquired:	August 28, 2014				

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F2c C10-C16	mg/kg	78	65	135	yes
F3c C16-C34	mg/kg	89	65	135	yes
F4c C34-C50	mg/kg	82	65	135	yes
Date Acquired:	August 28, 2014				

Extractable Petroleum Hydrocarbons - Water

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
F2 C10-C16	mg/L	3.4	3.2	30	0.2	yes
F3 C16-C34	mg/L	11.8	10.9	30	0.2	yes
F3+ C34+	mg/L	3.4	3.1	30	0.2	yes
Date Acquired:	September 03, 2014					

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
F2 C10-C16	mg/L	85.4	69.4	124.0	yes
F3 C16-C34	mg/L	145	120.0	160.0	yes
Date Acquired:	September 03, 2014				

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
F2 C10-C16	mg/L	76	75	125	yes
F3 C16-C34	mg/L	116	75	125	yes
F3+ C34+	mg/L	78	75	125	yes
Date Acquired:	September 03, 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

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Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
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Polychlorinated Biphenyls - Soil - Continued

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
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 - Soil - Surrogate

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Decachlorobiphenyl	%	110.323	50	150	yes
Date Acquired:	September 02, 2014				

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 03, 2014				

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aroclor 1254	ug/mL	110.00	80	120	yes
Date Acquired:	September 03, 2014				

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Aroclor 1016	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1221	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1232	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1242	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1248	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1254	ug/L	0.8	1	20	0.2	yes
Aroclor 1260	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1262	ug/L	<0.1	<0.1	20	0.2	yes
Aroclor 1268	ug/L	<0.1	<0.1	20	0.2	yes
Date Acquired:	September 03, 2014					

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W: www.exova.com

Quality Control

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

Polychlorinated Biphenyls - Water - Continued

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
Aroclor 1254	ug/L	95	50	150	yes

Date Acquired: September 03, 2014

Polychlorinated Biphenyls - Water - Surrogate

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Decachlorobiphenyl	%	79.4089	50	150	yes

Date Acquired: September 03, 2014

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Methodology and Notes

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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 in Soil EDM	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	28-Aug-14	Exova Edmonton
BTEX-CCME in Soil EDM	US EPA	*	US EPA method, 8260B/5035	28-Aug-14	Exova Edmonton
BTEX-CCME in Water EDM	US EPA	*	US EPA method, 8260B/5035	28-Aug-14	Exova Edmonton
BTEX-CCME in Water EDM	US EPA	*	Volatile Organic Compounds by GCMS / Purge and Trap for Aqueous Samples, 8260B/5030B	28-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	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
Moisture	Carter	*	Gravimetric Method with Oven Drying, 51.2	29-Aug-14	Exova Edmonton
PCB - Soil	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	02-Sep-14	Exova Calgary
PCB - Water	US EPA	*	Polychlorinated Biphenyls (PCBs) by Gas Chromatography, 8082A	03-Sep-14	Exova Calgary
TEH-CCME in Soil (Shake) EDM	CCME	*	Reference Method for Canada-Wide Standard for PHC in Soil, CWS PHCS TIER 1	28-Aug-14	Exova Edmonton
TEH-CCME in Water EDM	MMCA	*	Petroleum Hydrocarbons in Water, A108.0	03-Sep-14	Exova Edmonton

** Reference Method Modified*

Exova
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Methodology and Notes

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

References

APHA	Standard Methods for the Examination of Water and Wastewater
Carter	Soil Sampling and Methods of Analysis.
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
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Analytical Report

Bill To:	Biogenie S.R.D.C. Inc.	Project:	
Report To:	Biogenie S.R.D.C. Inc.	ID:	CAM-5 2014
	350, rue Franquet	Name:	2014 LFM
	Sainte-Foy, QC, Canada	Location:	Mackar Inlet
	G1P 4P3	LSD:	
Attn:	Jean-Pierre Pelletier	P.O.:	
Sampled By:	A. Passalis	Acct code:	14.071.309663
Company:	Sila		

Lot ID:	**1023071**
Control Number:	C0042763
Date Received:	Aug 28, 2014
Date Reported:	Sep 8, 2014
Report Number:	1943938

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.

Exova — Testing, calibrating, advising

www.exova.com

ED 120-02

Project Information

Project ID: CAM-S 2014
Project Name: 2014 LFM
Project Location: MACKAR INLET
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote # 14.071.309613

Invoice to:

Company: SILA REMEDIATION
Address: 1260 Boul Lebourgneuf
Quebec, QC.
Attention: J.P. Pelletier
Phone: 418-626-1688 EXT 5892
Cell:
Fax:
E-mail: jean-pierre.pelletier@lvm.ca
Agreement ID:
Copy of report:

Report To:

Company:
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 12:27

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 (cm)	Depth end (cm)	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals (see quote)	PCB's	TPH (F1-F3)	T. Metals
1		CS14-5WA			21/08/14	SOIL		2	X	X	X	
2		5WB							X	X	X	
3		6WA							X	X	X	
4		6WB							X	X	X	
5		7WA							X	X	X	
6		7WB							X	X	X	
7		8WA							X	X	X	
8		8WB							X	X	X	
9		CS14-8W				WATER		7		X	X	X
10		CS14-BDW1				"		7		X	X	X
11												
12												
13												
14												
15												

Enter tests above (√ relevant samples below)

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/)

LOT: 1023071 COC

Shipping: COD Y/ N
and size of coolers
Temp. received: 7.6
Delivery Method:
Waybill:
Received by: J NUNEZ

Please indicate any potentially hazardous samples

Page 1 of 1 Control # C 0042763

ED 120-02

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 #: R1647060
Version: 3R

CERTIFICATE OF ANALYSIS – REVISED REPORT

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

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	1	2014/09/05	2014/09/08	AB SOP-00039	CCME CWS/EPA 8260C m
CCME Hydrocarbons (F2-F4 in soil)	1	2014/09/05	2014/09/09	AB SOP-00036 / AB SOP-00040	CCME PHC-CWS
Elements by ICPMS - Soils	1	2014/09/10	2014/09/10	AB SOP-00001 / AB SOP-00043	EPA 200.8 R5.4 m
Moisture	1	N/A	2014/09/06	AB SOP-00002	CCME PHC-CWS
Polychlorinated Biphenyls (1)	1	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	2014/09/10	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 #: R1647060
Version: 3R

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		KN2769		
Sampling Date		2014/08/21		
COC Number		A159155		
	UNITS	**C514-7WB**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	2.0	0.30	7627619
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	7627782
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	50	7627782
Reached Baseline at C50	mg/kg	Yes		7627782
Volatiles				
F1 (C6-C10) - BTEX	mg/kg	<12	12	7627727
(C6-C10)	mg/kg	<12	12	7627727
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	98		7627727
4-Bromofluorobenzene (sur.)	%	98		7627727
D10-ETHYLBENZENE (sur.)	%	100		7627727
D4-1,2-Dichloroethane (sur.)	%	93		7627727
O-TERPHENYL (sur.)	%	82		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 WATER (WATER)

Maxxam ID		KN2770		
Sampling Date		2014/08/21		
COC Number		A159155		
	UNITS	**C514-8W**	**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.)	%	101		7627246
4-Bromofluorobenzene (sur.)	%	98		7627246
D4-1,2-Dichloroethane (sur.)	%	96		7627246
O-TERPHENYL (sur.)	%	85		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		KN2769		
Sampling Date		2014/08/21		
COC Number		A159155		
	UNITS	**C514-7WB**	**RDL**	**QC Batch**
Polychlorinated Biphenyls				
Aroclor 1016	mg/kg	<0.010	0.010	7628083
Aroclor 1221	mg/kg	<0.010	0.010	7628083
Aroclor 1232	mg/kg	<0.010	0.010	7628083
Aroclor 1242	mg/kg	<0.010	0.010	7628083
Aroclor 1248	mg/kg	<0.010	0.010	7628083
Aroclor 1254	mg/kg	<0.010	0.010	7628083
Aroclor 1260	mg/kg	<0.010	0.010	7628083
Aroclor 1262	mg/kg	<0.010	0.010	7628083
Aroclor 1268	mg/kg	<0.010	0.010	7628083
Total Aroclors	mg/kg	<0.010	0.010	7628083
Surrogate Recovery (%)				
NONACHLOROBIPHENYL (sur.)	%	79		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		KN2769		
Sampling Date		2014/08/21		
COC Number		A159155		
	UNITS	**C514-7WB**	**RDL**	**QC Batch**
Elements				
Total Arsenic (As)	mg/kg	<1.0	1.0	7632817
Total Cadmium (Cd)	mg/kg	<0.10	0.10	7632817
Total Chromium (Cr)	mg/kg	85	1.0	7632817
Total Cobalt (Co)	mg/kg	3.5	1.0	7632817
Total Copper (Cu)	mg/kg	7.9	5.0	7632817
Total Lead (Pb)	mg/kg	2.5	1.0	7632817
Total Mercury (Hg)	mg/kg	<0.050	0.050	7632817
Total Nickel (Ni)	mg/kg	40	1.0	7632817
Total Zinc (Zn)	mg/kg	17	10	7632817

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		KN2770		
Sampling Date		2014/08/21		
COC Number		A159155		
	UNITS	**C514-8W**	**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.)	%	76		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		KN2770		
Sampling Date		2014/08/21		
COC Number		A159155		
	UNITS	**C514-8W**	**RDL**	**QC Batch**
Elements				
Total Arsenic (As)	mg/L	0.0032	0.00020	7631124
Total Cadmium (Cd)	mg/L	0.000085	0.000020	7631124
Total Chromium (Cr)	mg/L	0.059	0.0010	7631124
Total Cobalt (Co)	mg/L	0.014	0.00030	7631124
Total Copper (Cu)	mg/L	0.080	0.00020	7631124
Total Lead (Pb)	mg/L	0.015	0.00020	7631124
Total Nickel (Ni)	mg/L	0.042	0.00050	7631124
Total Zinc (Zn)	mg/L	0.080	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

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.

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER) Comments

Sample KN2770-01 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		%	
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	
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
			F2 (C10-C16 Hydrocarbons)	2014/09/09	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2014/09/09	<50		mg/kg	
7627921	LZ3	Matrix Spike	NONACHLOROBIPHENYL (sur.)	2014/09/09		89	%	30 - 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
7627921	LZ3	Matrix Spike	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	
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

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
7631124	SF3	Spiked Blank	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
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
			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

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

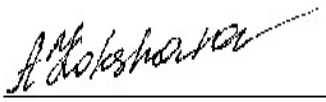
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7632817	JEP	RPD	Total Nickel (Ni)	2014/09/10	9.1		%	35
			Total Zinc (Zn)	2014/09/10	15.1		%	35

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).

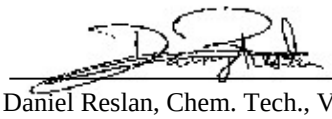
Validation Signature Page

Maxxam Job #: B478367

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

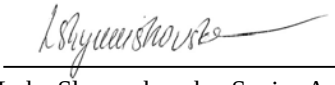


Anna Koksharova, M.Sc., Senior Analyst

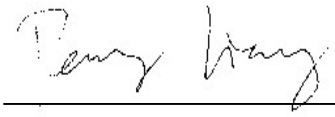


Daniel Reslan, Chem. Tech., Volatiles Supervisor

Justin Geisel, B.Sc., Supervisor, Organics



Luba Shymushovska, Senior Analyst, Organic Department

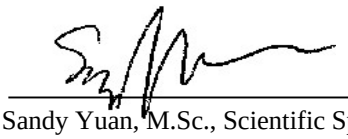


Peng Liang, Analyst II

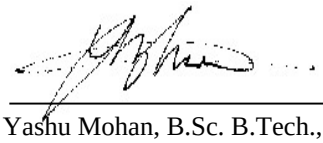
Validation Signature Page

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

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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.

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.

Correspondences from Exova concerning the integrity of the samples are provided in Annex 1. These documents indicate 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: one blind duplicate soil sample (C514-BD1) and one blind duplicate groundwater sample (C514-BDW1) were submitted, as an independent check on data reproducibility, and to assess the field QA/QC protocols, along with one travel blank (C314/C514-TB).
- 10% Inter-laboratory Duplicate Samples were sent to Maxxam: one blind duplicate soil sample (C514-7WB) and one blind duplicate groundwater sample (C514-8W) were submitted (to determine if variation in procedures may cause significant difference in analytical results).
- 10% Archival Samples of soil were sent to ESG.

3. LABORATORIES QA/QC

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

Quality assurance documents from Maxxam indicate that:

- The soil sample analyzed for metals, PCBs and PHCs were done in 1 single batch per parameter group:
    - Batch 7632817 for metals
    - Batch 7628083 for PCBs
    - Batch 7627727 for PHC fraction F1
    - Batch 7627782 for PHC fraction F2-F3
- The water sample analyzed was done in 3the following batches:
    - Batch 7631124 for most metals
        - Batch 7630982 for mercury
    - Batch 7627921 for PCBs
    - Batch 7627246 for PHC fraction F1
    - Batch 7623510 for PHC fraction F2-F3

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	0.00020	0.0010
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00020	0.0010
Cd	Exova	mg/kg	0.01	0.05	mg/L	0.000010	0.00005
	Maxxam	mg/kg	0.10	0.50	mg/L	0.000020	0.00010
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	0.00010	0.0005
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00030	0.0015
Cu	Exova	mg/kg	1.0	5.0	mg/L	0.00100	0.0050
	Maxxam	mg/kg	5.0	25.0	mg/L	0.00020	0.0010
Pb	Exova	mg/kg	5.0	25.0	mg/L	0.00010	0.0005
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00020	0.0010
Ni	Exova	mg/kg	0.5	2.5	mg/L	0.00050	0.0025
	Maxxam	mg/kg	1.0	5.0	mg/L	0.00050	0.0025
Zn	Exova	mg/kg	1	5	mg/L	0.0010	0.005
	Maxxam	mg/kg	10	50	mg/L	0.0030	0.015
Hg	Exova	mg/kg	0.01	0.05	mg/L	NA	NA
	Maxxam	mg/kg	0.05	0.25	mg/L	0.00002	0.00010
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	0.1	0.5
	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

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

Review of results indicated relatively minor differences in metal concentrations within the intra-laboratory duplicate samples, with the individual parameter RPD values generally falling within the acceptable range.

Results from the inter-laboratory duplicate samples indicated significantly greater concentration differences for chromium and nickel. Inter-laboratory results do raise concern as the actual chromium and nickel concentrations are 5 to 10 times greater in results from Maxxam. The only potential explanation lies with the 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 (C514-8W / C514-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 III, along with the calculated RPD for each parameter. As noted in the table, mercury (which was not analyzed 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 0.8% and 11.7%. Results from inter-laboratory results also indicate minor differences in measured concentrations.

The travel blank (TB) was submitted for metals, PCB and PHC analyses are also summarized in Tables III. As shown, all of the results were below the laboratory method detection.

4.2. LABORATORIES

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

4.2.1. BLANKS

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

4.2.2. ANALYTICAL DUPLICATES

All analytical duplicates from both laboratories, for both matrices and for all parameters had RSD' 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 - Quality Assurance Samples

Sample #	Laboratory	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]
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	0.10	1.0	1.0	5.0	1.0	1.0	10	0.05	0.01	12	10	50
RPD Minimum - Maxxam		5.0	0.50	5.0	5.0	25.0	5.0	5.0	50	0.25	0.05	60	50	250
Intra-Lab Duplicate Samples (Exova)														
C514-7WB	Exova	0.2	<0.01	6.2	3.2	6.7	<4.9	7.7	20	<0.01	<0.1	<10	<50	<50
C514-BD1		0.2	<0.01	5.1	2.9	5.3	<4.9	6.8	17	<0.01	<0.1	<10	<50	<50
Relative % Difference		N/A	N/A	19.5	N/A	N/A	N/A	12.4	N/A	N/A	N/A	N/A	N/A	N/A
Inter-Lab Duplicate Samples (Exova-Maxxam)														
C514-7WB	Exova	0.2	<0.01	6.2	3.2	6.7	<4.9	7.7	20	<0.01	<0.1	<10	<50	<50
	Maxxam	<1	<0.1	85.0	3.5	7.9	2.5	40.0	17	<0.05	<0.01	<12	<10	<50
Relative % Difference		N/A	N/A	172.8	N/A	N/A	N/A	135.4	N/A	N/A	N/A	N/A	N/A	N/A

Table III: Groundwater Chemical Analysis Results - Quality Control Samples

Sample #	Laboratory	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]
RDL - Exova		0.0002	0.000010	0.0005	0.0001	0.0010	0.0001	0.0005	0.001	N/A	0.10	0.1	0.10	0.1
RPD Minimum - Exova		0.0010	0.000050	0.0025	0.0005	0.0050	0.0005	0.0025	0.005	N/A	0.50	0.5	0.50	0.5
RDL - Maxxam		0.0002	0.000020	0.0010	0.0003	0.0002	0.0002	0.0005	0.003	0.00002	0.05	0.1	0.71	1.4
RPD Minimum - Maxxam		0.0010	0.000100	0.0050	0.0015	0.0010	0.0010	0.0025	0.015	0.00010	0.25	0.5	3.55	7.0
Intra-Lab Duplicate Samples (Exova)														
C514-8W	Exova	0.0040	0.000050	0.0678	0.0158	0.0920	0.0118	0.0485	0.092	N/A	<0.10	<0.1	<0.1	<0.1
C514-BDW1		0.0042	0.000060	0.0762	0.0162	0.0950	0.0119	0.0520	0.093	N/A	<0.10	<0.1	<0.1	<0.1
Relative % Difference		4.9	N/A	11.7	2.5	3.2	0.8	7.0	1.1	N/A	N/A	N/A	N/A	N/A
Inter-Lab Duplicate Samples (Exova-Maxxam)														
C514-8W	Exova	0.0040	0.000050	0.0678	0.0158	0.0920	0.0118	0.0485	0.092	N/A	<0.1	<0.1	<0.1	<0.1
	Maxxam	0.0032	0.000085	0.0590	0.0140	0.0800	0.0150	0.0420	0.080	<0.02	<0.05	<0.1	<0.71	<1.4
Relative % Difference		22.2	N/A	13.9	12.1	14.0	23.9	14.4	14.0	N/A	N/A	N/A	N/A	N/A
C314/C514/TB	Travel Blank	<0.0002	<0.00001	<0.0005	<0.0001	<0.001	<0.0001	<0.0005	<0.001	-	<0.1	<0.1	<0.1	<0.1

ANNEX 3

Field Notes and Chain of Custody Forms

AUGUST 21, 2014

PLANE 730 - 910 - CB → CAM-3
drop camping gear
935 - 1045 CAM-3 → CAM-5

CAM-5 MACKAR INLET 5°C Overcast
NE@ 20 KM/H

TIER II DF

MW-5 SLUP = 54 WP 417
⊻ dry bot. 1.91

418 V-SE/SW ALONG TOE
419 V-SE/SW, PAN-W-E @ N CRNR
420 SMALL DEPR NEAR CREST, V-NE/NW SW.
Same dimensions
3 AREAS

42V - V-SW/NE MINOR EROS ON SURFACE COVER
@ MID-UP 10' x 2', FINES ONLY
422 V-SW/NW, PAN-N-SSW @ E CRNR
423 V-SW/NW @ E TOE
424 V-NE/NW, PAN-E-NNW
425 V-SE/NE, PAN-S-NNW @ E CRNR
V-W @ MINOR DEP OF FINES @ CNR
NO CHANNELING

426 V-W/NW DEPR 40x15x5↓
427 V-SE/NE @ W TOE
428 BM-6.

MW-5 CS14-SW A/B 12 ms
dk brn sand, med gr, dry, w/ boulders/cbl
0-10 40-50

MW-6 SLUP=63 47 mm dia
WP 429 ⊻ dry (2.08) bott 2.11

MW-7 SLUP=38
WP 430 ⊻ dry bott 1.69

MW-8 SLUP 69 BDW!
WP 431 ⊻ 2.05 bott 232
T 2.9/2.4 COND 407/432/441
PH 8.9/8.6/8.6 Purge 500 mL Turb 39

432 V-NNW @ S FACE/SLOPE
NO OBS EROSION ALONG TOE OF TYPE I
433 V-SW @ NE SLOPE

MW-6 dk CS14-SW A/B 0.8 mSE
dk brn sand, lcs gr, some cbls
0-10 40-50

LEVEL

TIER II (CONT)

434 V-SE @ NW-SLOPE

MW-7 CS14-7W A/B BD1 1mNE
BRN SAND CS-GR. DAMP
0-10 40-50

435 V-NE @ SW SLOPE (MW7 IN FOREGND)

MW-8 CS14-8W A/B
BRN SAND; M-CS GR; DAMP,
0-10 40-50

437 HYDROCARBON STAIN 40x35
V-N

438 VT-2 V-SSE (VT-4 IN BKGND)

439 VT-4 ; V-E

440 MIDDLE COVER, V-NE, SE, SW, NW

441 VT-3 N + NE (VT-2 IN BKGND)

442 S END OF MIN EROSION: 6mL, 15W, 2↓
V-NE

443 VT-1 V-NNE 13m to (2x)

444 MIN EROS V-NE 26mL to 445
10W, 2↓, V-SW

446 ALONG NE/SW EROS. 2↓ MOST ACROSS
COVER; V-NE

NONHAZARDOUS WASTE FACILITY

WSW/NE/W (MW-16 IN FOREGND)

447 V-~~NW/SE/N~~

448 V- WSW/NE @ E TOE

449 V- WSW/NE/PAN N-SW @
E CRNR

450 DEPR ADJ TYPE 1 V-SE/E
12x40x7↓

451 MANY SMALL EROSION CH ON S SLOPE
↓ 10W x 2↓ V-SE

454 V-SE

455 EROS (2013): V-SE/NW. TOP-TOE
20-30W, 5↓, DEPOSITION OF FINES
ALONG TOE V-WSW

456 EROSN (2013) V-NW/SE TOP/TOE
20W x 5↓

457 V-NW/ENE, PAN E-NW @ SW CRNR

458 V- NW/E-NE @ TOE

459 V- NW/ENE FROM EDGE OF RD
NOTE ☒ ALONG TOE AREA
NO STAINING, NO PONDED ☒ ON
460, V-N COVER.

LEVEL

461 V- SE/ENE , PAN S-NE @ NW CRNR
462 V-SE/ENE @ TOE
463 MIN EROSION (2013) AREA 4 SPOTS
464 10-20W TOP-TOE, 2-5↓ V-NNW/S
1-1/2 m APART
465 EROS ON N SLOPE TOP-TOE 15W x 5↓ 2-
V-NNE/S, FINES ON LOWER 1/2 SLOPE
466 V-WSW/E @ NE CNR PAN.
467 " " @ TOE W-SE
468 EROS OF FINES @ TOP 1m & slope
V- E 1m x 20 x 5↓ Self arm
469 HYD. STAIN ; 2 small 10-20, 20
470 MANY SMALL CHANNELS ON SLOPE
V-NE/SW. TOP-TOE 15 x 5↓
471 " NE - 2↓ MOST OF THEM

USAF 3 ASBESTOS LANDFILLS.

472 V-NW/W @ SE TOE
473 PAN N-W.
474 TIRE RUTS (SAME) 2 SETS V-N/S
475 " " V-N
LIN. DEPR (2013) ← TIRE TRACK
476 V. NW/E @ SW CRNR
477 V. NW @ W TOE

478 OLD DIAMD CRNR MARKER HEAVY EQUIP TRACKS
479 POSSIBLE SM. DEPR (2013) 5↓ SAME
480 2 TIRE MARKS (0.6-1.0m L) 15W, 5↓
V- SW/NW
481 V SW/NE PAN S-N
482 VEHICLE RUTS ON SIDE SLOPE (SAME)
V-S
483 MIN EROS + VEHICLE RUTS
V-W/SE 1.5-2m L x 15 x 5-10d
MIN VEG. V-NV
484 V-N @ NEW COVER / ROUGH GROUND
485 V NNW
486 3. SM Piles & bent / or Feet. V-W
487 V. SE ALONG RD, MIN EROS @
toe 10W, 2-4↓ 1/2 WAY ALONG
SIDE

Lower Site Landfill - South

488 V-S @ EROSION ACROSS ACCESS RD.
NOT IN CONTACT. 2m W, 10m L, 5-10↓
489 V-SE ALONG TOE
490 V-NW/SE / SW @ MINOR SEEPAGE
@ TOE / STAIN 2m W, 2 1m L, V-NE
HEAVY EQUIP TRACKS ON SLOPE
491 STAIN @ TOE 2m x 0.4 1 WATER LEVEL RUTS ALONG

492) V-W @ water pond @ toe. 4x25 v2ob
493 LIN. DEPR. w/ CRKS. V-NW/SW.
35x20x5-7↓
494 V-NW/NE
495 PAN NE-W-
496 TENSION CRACK - 3mL x 1-3m W-
@ CREST
ALSO LIN DEPR ⊥ TO TOE 2m x 30 x 5↓
V-SW
497 V-W, NE ALONG S TOE.
498 LIN DEPR 4m x 20 x 2↓ V-N/W
499 SMALL STAIN 30x30, V-N
500 2 - POTHOLES NEAR CREST
30-50, 30 x 10↓ V-N/E
501 V-NNW
502 V-W/NW
503 2 POTHOLES 20-30; 30, 5↓
V-N/E.
504 small MC stain 15x15 V-N
505 DEPR. ON SLOPE 40x20x10↓ V-E
506 DEPR @ CREST 60x40x10↓ (same)
30x40x5↓ V-E/S
507 Scouring @ crest upto 20↑ V-E/S.
508 } EROSION TOP-TOE. 30-50w, 2-5↓
509 } V-E x 2 FINES ONLY, SELF ARM
↘ 510.

511, V NNW @ STAINS + ≡ @ toe, backslope
512 V-NW. FROM SE EDGE, NO DIRECT
SEEP OBSERVED
513 N. edge ~20mL, V-S/N ≡ both
514 V-SE E SLOPE
515 V-SW/SE
516 wetted area @ bared slope 8x4m
V-S
517 V-NE downslope 18m
518 V-N @ EROSION ON SLOPE
519 MIDWAY, V-N.
0.5-2m W, 10-30↓ 18mL
Dep. fines along toe. 520 - V-S
521 - V-NE MIN EROSION UPGRADIENT
CONVERGING - 15-30w, 25 5↓ self arm
522. - crack ext. NW dir. V-NW
P. infilled upto 10cm W. 2cm. 16mL intercept
3cm↓ at drainage/eros. 523 V-SE
525 PAN SW-E, V-NE @ erosion
526 MIN EROS ON SLOPE, CREST-TOE
6-7mL, 15w x 2↓ fines only
4 spots V-NNW/SSE
NO PONDED ≡ @ TOE
527 V. NE ALONG TOE
(4pm
5hr HOLD

LEVEL

Exova — Testing, calibrating, advising

www.exova.com

ED 120-02

Project Information

Project ID: CAM-S 2014
Project Name: 2014 LFM
Project Location: MACKAR INLET
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote # 14.071.309613

Invoice to:

Company: SILA REMEDIATION
Address: 1260 Boul Lebourgneuf
Quebec, QC.
Attention: J.P. Pelletier
Phone: 418-626-1688 EXT 5892
Cell:
Fax:
E-mail: jean-pierre.pelletier@lvm.ca
Agreement ID:
Copy of report:

Report To:

Company:
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 12:27

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 (cm)	Depth end (cm)	Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Metals (see quote)	PCB's	TPH (F1-F3)	T. Metals
1		CS14-5WA			21/08/14	SOIL		2	X	X	X	
2		5WB							X	X	X	
3		6WA							X	X	X	
4		6WB							X	X	X	
5		7WA							X	X	X	
6		7WB							X	X	X	
7		8WA							X	X	X	
8		8WB							X	X	X	
9		CS14-8W				WATER		7		X	X	X
10		CS14-BDW1				"		7		X	X	X
11												
12												
13												
14												
15												

Enter tests above (√ relevant samples below)

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/)

LOT: 1023071 COC

Shipping: COD Y/ N
and size of coolers
Temp. received: 7.6
Delivery Method:
Waybill:
Received by: J NUNEZ

Please indicate any potentially hazardous samples

Page 1 of 1 Control # C 0042763

ED 120-02

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

09/191(2) MPC

Chain of Custody

A159155

Page: 1 of 1

	Invoice To: C/O Report Address ☐	Report To: Same as Invoice ☒	Report Distribution (E-Mail):	REGULATORY GUIDELINES:
Company:	SILA REMEDIATION		jean-pierre.pelletier@elvm.ca	☐ AT1
Contact:	J.P PELETTIER			☐ CCME
Address:	1260 BOUL LEBOURGNEUF			☐ Regulated Drinking Water
	Prov: QUEBEC, QC PC:	Prov: PC:	andrew.passalis@gmail.com	☒ Other:
Contact #s:	Ph: 418-626-1655 EXT 5892	Ph: Cell:		

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-F3~~	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP (Metals) See LRM	Basic Class II Landfill	PCBs	WATER: ☐ ~~BTEX F1-F3 VOCs~~	☐ BTEX F1-F2	☐ BTEX F1-F4	☐ Routine Water ☐ Turb ☐ TOC ☐ DOC	☐ F ☐ DOC	Regulated Metals (CCME / AT1) Total	Regulated Metals (CCME / AT1) Dissolved	Mercury ☒ Total ☐ Dissolved	Other Analysis: PCBs	Other Analysis: 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																							

RECEIVED IN YELLOWKNIFE By: 10:45 2014-09-04

Temp: 6 / 7 / 17

Please indicate Filtered, Preserved or Both (F, P, F/P) → F/P: AD-7/SK

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, ~~Mo~~, Zn, Hg)		# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:	Maxxam Job #:
HIROMOELLE	20140905	1040	B478367

Custody Seal	Temperature	Ice
Intact on both	2.2, 3.1, 3 Present in both	

Lab Comments: