2011/2012 Monitoring and Maintenance Program
Come By Chance Secure Landfill
Come By Chance, Newfoundland and Labrador

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Prepared for:
Newfoundland and Labrador Department of Environment and Conservation

Prepared by:
CBCL LIMITED
Consulting Engineers

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Executive Summary

CBCL Limited (CBCL) was retained by the Newfoundland and Labrador Department of Environment and Conservation (DOEC) to conduct the 2011/2012 Monitoring and Maintenance Program at the Come By Chance Secure Landfill in Come By Chance, Newfoundland and Labrador (NL). The program was conducted in accordance with the Operations, Maintenance and Monitoring Manual (OMM) prepared by Pinchin Leblanc Environmental (Pinchin) in 2010, and generally included the inspection and survey of the existing landfill cap, inspection of the existing groundwater drainage system, sampling and analysis of groundwater, surface water and leachate, and the removal/discharge of leachate.

The Come By Chance Secure Landfill is located approximately 2.5 km west of the TransCanada Highway and approximately 4 km south of the town of Come By Chance, NL. The landfill covers an area of approximately 1.98 hectares (4.89 acres) and is enclosed with a chain link fence. Between 1994 and 1996, the Come By Chance Secure Landfill served as the disposal site for industrial waste and contaminated soil generated during operation of the Come By Chance Oil Refinery.

The CBCL 2011/12 monitoring and maintenance program consisted of sampling of the primary and secondary leachate collection valve chambers (in advance of pumping down the chambers by discharging to a nearby ditch), groundwater and surface water sampling (September, 2011 only), and landfill cover and groundwater drainage system inspection. The summer site visit was conducted in September, 2011 while the winter site visit was conducted in February, 2012.

The landfill cover inspection and survey completed in September, 2011 indicated that the landfill vents (V1 and V2) and the lateral drains were in good condition with no obstructions. As well, there was no evidence of erosion or animal burrows on the landfill cap. At the time of this inspection the vegetation height exceeded the maximum recommended height of 0.3 metres (i.e., alders were measured at a maximum height of 1.70 metres), however, this vegetation was noted to have been cut prior to the February, 2012 leachate sampling activities, measuring a maximum height of approximately 0.14 metres.

The groundwater drainage system inspection completed in September, 2011 indicated that the four (4) clean-out pipes (C01 to C04) were clear of debris/blockages. The inspection also revealed and that the outflow drainage pipe was observed to be cut off in the center of a bank located on the neighbouring liquid asphalt storage plant property. Overall, it appeared that the groundwater drainage system was functioning properly.

Results of the groundwater sampling program completed in September, 2011 revealed concentrations of BTEX, modified TPH, metals, PAHs, VOCs, PCBs, general chemistry and TSS parameters were either non-detected or detected at concentrations below the applicable guidelines.

Results of the surface water sampling program completed in September, 2011 revealed that concentrations of BTEX, modified TPH, PAHs, VOCs, PCBs, general chemistry (with the exception of pH in

the Surface-Up sample) and TSS parameters of the surface water samples analyzed were either non-detected or detected at concentrations below the applicable guidelines. Of the metals analysed, aluminum (Surface-Up and Surface-Down), cadmium (Surface-Up), chromium (Surface-Up and Surface-Down), copper (Surface-Up), iron (Surface-Up and Surface-Down), and lead (Surface-Up) exceeded the applicable guidelines in the analyzed upstream and/or downstream surface water samples. Of the metals which exceeded the applicable guidelines, chromium is the only metal where concentrations were seen to increase in the downstream sample in comparison with the upstream sample.

Results of the leachate sampling program revealed that concentrations of BTEX and modified TPH, PAHs (with the exception of pyrene (PLCS and SLCS - February, 2012), VOCs, PCBs, general chemistry (with the exception of phenols (PLCS, SLCS and DUP – February, 2012) and TSS parameters were either non-detected or detected at concentrations below the applicable guidelines. Of the metals analyzed in the leachate samples, iron (PLSC - September, 2011), zinc (SLCS - September, 2011), boron (SLCS and DUP - February, 2012) and total chromium (SLCS - September, 2011 and PLCS - February, 2012) exceeded the CCME FAL guidelines, but were below the Schedule "A" regulations, in the analyzed leachate samples. Results of the toxicity testing indicated that the leachate from both the PLCS and SLCS was non-toxic to rainbow trout.

In accordance with the OMM, both pumping events conducted during September, 2011 and February, 2012 consisted of two Site visits with a leachate flow rate of under 15 L/min. On September 29, 2011, approximately 6,200 L of leachate was pumped from the PLCS valve chamber with a final in-flow rate of 14.7 L/min. Approximately 31,200 L of leachate was pumped from the SCLS valve chamber with a final measured in-flow rate of 125.0 L/min. On September 30, 2011, approximately 4,360 L of leachate was pumped from the PLCS valve chamber with a final in-flow rate of 14.1 L/min. Approximately 20,100 L of leachate was pumped from the SCLS valve chamber with a final measured in-flow rate of 15.3 L/min.

On February 13, 2012, approximately 5,670 L of leachate was pumped from the PLCS valve chamber with a final average in-flow rate of approximately 14.3 L/min. Approximately 8,900 L of leachate was pumped from the SCLS valve chamber with a final average measured in-flow rate of approximately 17.3 L/min. On February 14, 2012, approximately 4,450 L of leachate was pumped from the PLCS valve chamber with a final average in-flow rate of approximately 13.2 L/min. Approximately 5,735 L of leachate was pumped from the SCLS valve chamber with a final average measured in-flow rate of approximately 14.4 L/min.

Based on the results of the September, 2011 monitoring and maintenance events conducted at the Come By Chance Secure Landfill, CBCL recommends that the outflow drainage pipe for the groundwater drainage system be extended from the bank and the grate that has been removed be replaced.

It is also recommended that concentrations of chromium in surface water sampled during the next monitoring event be noted to determine whether the identified increase in concentration in the downstream sample in comparison with the upstream sample is an anomaly or could be indicative of a continued trend possibly indicating the presence of a source area on-site. It is also recommended that during future sampling events, chromium be analyzed for trivalent {CR(III)}and hexavalent chromium

{CR(VI)}. This will allow for an improved understanding of the data and comparison to concentrations measured in leachate (which is analyzed for total chromium and CR VI)

The next monitoring and maintenance event, consisting of groundwater, surface water and leachate sampling and pumping, should be conducted in June of 2012, in accordance with the 2010 OMM.

CHAPTER 1 2011/12 MONITORING AND MAINTENANCE PROGRAM

1.1 Introduction

CBCL Limited (CBCL) was retained by the Newfoundland and Labrador Department of Environment and Conservation (DOEC) to conduct the 2011/2012 Monitoring and Maintenance Program at the Come By Chance Secure Landfill in Come By Chance, Newfoundland and Labrador (NL)(Figure 1, Appendix A). The program was conducted in accordance with the Operations, Maintenance and Monitoring Manual (OMM) prepared by AMEC in 2005 and revised by Pinchin Leblanc Environmental (Pinchin) in 2010. The program generally included the inspection and survey of the existing landfill cap, inspection of the existing groundwater drainage system, sampling and analysis of groundwater, surface water and leachate, and the removal/discharge of leachate.

The summer monitoring and maintenance events were conducted in September, 2011. The winter events were conducted in February, 2012.

1.2 Site Description and History

The Come By Chance Secure Landfill is located approximately 2.5 km west of the TransCanada Highway and approximately 4 km south of the town of Come By Chance, NL (Figure 1, Appendix A). The landfill covers an area of approximately 1.98 hectares (4.89 acres) and is enclosed with a chain link fence (Figure 2, Appendix A).

Between 1994 and 1996, the Come By Chance Secure Landfill served as the disposal site for industrial waste and contaminated soil generated during operation of the Come By Chance Oil Refinery. Currently, the landfill is capped and has a primary and secondary leachate collection system (PLCS and SLCS) equipped with drainage pipes that discharge to concrete encased collection chambers. Monitoring events conducted between 2004 and 2007 indicated that the landfill cap and primary liner appeared to be minimizing the infiltration of precipitation into the landfill. However, large volumes of leachate identified in the SLCS indicated that groundwater may be entering the SLCS via perforations in the liner, likely from areas to the north of the landfill where it was determined that, periodically, groundwater levels were higher than the base of the SLCS. As a result, in 2009, a groundwater drainage system,

consisting of a French drain was installed along the north and east sides of the landfill and was connected to a storm drain located along the east side of the landfill. The collected groundwater is directed from the storm drain towards Arnolds Cove, west of the landfill.

The landfill is currently bounded by an abandoned mill building to the north, undeveloped forested areas to the east and south and a gravel parking area followed by a liquid asphalt storage facility followed by Arnolds Cove to the west. The Come By Chance Oil Refinery is located approximately 200 metres south of the landfill.

1.3 Objectives

The specific objectives of this Maintenance and Monitoring Program were to:

- Monitor leachate characteristics and remove excess leachate from the PLCS and SLCS;
- Monitor the surrounding surface water and groundwater at pre-determined locations to ensure the landfill leachate is not adversely affecting the environment;
- Assess the integrity of the landfill cap;
- Maintain the landfill in accordance with the OMM prepared by AMEC (2005) and revised by Pinchin (2010); and,
- Inspect and maintain the groundwater drainage system.

1.4 Scope of Work

The scope of work for this Maintenance and Monitoring Program was conducted in accordance with the OMM prepared by AMEC in 2005 and revised by Pinchin Leblanc in 2010, and as described in the CBCL proposal titled “2011 Monitoring and Maintenance Program, Come By Chance Secure Landfill”, dated July 2011, and consisted of the following general components:

- Inspecting the existing landfill cap, including measuring the height of vegetation, inspecting the two (2) landfill vents (V1 and V2), slopes and lateral drains and the presence of erosion or animal burrows (September, 2011);
- Surveying four (4) previously established control points (ECP1 to ECP4) on the landfill cap to determine if settlement is occurring (September, 2011);
- Inspecting the existing groundwater drainage system, including the outflow drainage pipe and each of the four (4) clean-out pipes (C01 to C04) (September, 2011);
- Measuring the flow rate from the outflow drainage pipe, if possible (September, 2011);
- Collecting groundwater samples from each of the six (6) existing monitor wells for laboratory analysis of petroleum hydrocarbons, metals, general chemistry, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs) and total suspended solids (TSS) (September, 2011);
- Collecting surface water samples from two (2) pre-determined locations, including from a brook located up-gradient of the landfill and from the drainage ditch located down-gradient of the landfill, for laboratory analysis of petroleum hydrocarbons, metals, general chemistry, PAHs, PCBs, VOCs and TSS (September, 2011);

- Collecting leachate samples from the primary leachate collection system (PLCS) and the secondary leachate collection system (SLCS) for laboratory analysis of petroleum hydrocarbons, metals, general chemistry, PAHs, PCBs, VOCs, TSS and toxicity (September, 2011 and January 2012);
- Pumping and discharging the leachate from the PLCS and SLCS to the drainage ditch located west of the landfill (September, 2011 and February, 2012); and,
- Preparing this report, summarizing the field work and analytical results for this program.

1.5 Regulatory Framework

1.5.1 Groundwater

Analytical results for petroleum hydrocarbons in groundwater have been compared to the Atlantic Risk Based Corrective Action (RBCA) Tier I Risk Based Screening Levels (RBSLs) for a commercial, non-potable site with coarse grain soils.

Analytical results for metals, general chemistry, PAHs, PCBs and VOCs in groundwater have been compared to the Ontario Ministry of the Environment's (OMOE) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *"Environmental Protection Act"* (July 27, 2009), specifically Table 3 (Full Depth Generic Site Condition Standard in a Non-Potable Ground Water Condition). The OMOE Table 3 groundwater standards are protective against exposure from vapours which may migrate to indoor air, and are protective for aquatic receptors in surface waters which could be affected by the discharge of groundwater.

1.5.2 Surface Water

The surface water analytical results have been compared to the Canadian Council Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Life (FAL) (last updated September 2007).

1.5.3 Leachate

The leachate analytical results have been compared to both the Newfoundland and Labrador Regulation 65/03, *Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act., filed May 23, 2003* and the CCME FAL guidelines.

CHAPTER 2 METHODOLOGY

2.1 Inspection and Survey of Landfill Cap

On September 2, 2011, a comprehensive inspection and survey of the existing landfill cap was completed to identify and record the condition of the landfill cap. Specifically, the height of vegetation, condition of landfill vents (V1 and V2), condition of slopes and lateral drains, and the presence of erosion or animal burrows were assessed and recorded during the site visit. In addition, four (4) previously established elevation control points (ECP1 to ECP4) were surveyed to determine if landfill settlement is occurring. Following the inspection, findings related to the inspection of the landfill cap and drains were documented and reported to the DOEC in the CBCL 2011 Draft Field Summary Letter.

2.2 Inspection of Groundwater Drainage System

The existing groundwater drainage system, including the outflow drainage pipe and each of the four (4) clean-out pipes (C01 to C04) was inspected during the September 2, 2011 site visit. In addition, the ground surface above the French drain and the steel pipe leading from the French drain to the discharge were assessed to determine if settlement has occurred. At the time of the site visit, there was no groundwater being discharged from the outflow drainage pipe.

2.3 Groundwater Monitoring

Groundwater samples were collected from each of the six (6) existing monitoring wells (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW19-1A) on September 2, 2011, and submitted to the laboratory for analysis of BTEX, modified TPH, metals, PAHs, VOCs, PCBs, general chemistry and TSS.

Groundwater samples were collected using dedicated disposal bailers. Static groundwater level measurements (hydraulic head) were obtained using an electronic water level meter. Prior to use in each well, the meter probe was decontaminated. The condition of each well was noted and the depth to the water table was measured to within 0.001 m, relative to the top of PVC riser. The total well depths were also measured to determine purge volumes.

Prior to collecting the groundwater samples, the non-representative casing water from each well was purged to obtain water representative of groundwater outside the screened portion of the well. A minimum of three (3) casing volumes was purged prior to collecting the samples.

During the initial well purging and sampling, temperature, pH and specific conductance measurements were collected using properly calibrated meters. Consistent readings of these parameters indicated adequate purging was completed.

2.4 Surface Water Sampling

On September 2, 2011, two (2) surface water samples were collected from pre-determined locations, including a creek southeast (up-gradient) of the landfill (Surface-Up) and a ditch running in an east-west direction (down-gradient) of the landfill (Surface-Down). The surface water samples were collected by submerging the sample bottles directly into the water and filling the bottles, leaving no headspace. The samples were submitted for laboratory analysis of BTEX, modified TPH, metals, PAHs, VOCs, PCBs, general chemistry and TSS.

2.5 Leachate Sampling and Removal

Two (2) leachate monitoring events were conducted; the first on September 2, 2011 and the second on February 7, 2012. During each event, leachate head measurements and samples were collected from both the primary (PLCS) and secondary (SLCS) valves in the valve chambers. The pH, temperature and specific conductance of the leachate was monitored during the sampling using properly calibrated pH and specific conductance meters.

The laboratory results were reviewed and compared to the regulations and guidelines described above in Section 1.4. Following the review and approval from DOEC, subsequent site visits were conducted to remove and discharge the leachate into the drainage ditch located adjacent to the landfill. The first leachate pumping events were conducted on September 29 and 30, 2011 and the second pumping events were conducted on February 13 and 14, 2012.

Pumps and suction hoses were used to remove the leachate from the collection chambers. The hydraulic head of the leachate in the valve chambers was measured following removal of the leachate from the collection chamber. Flow rates were measured during pumping of the leachate into the drainage ditch to estimate the total leachate volume in both the PLCS and SLCS. The PLCS and SLCS valve chambers were pumped until the flow rates were below 15 L/min (4 igpm) on two (2) consecutive days of pumping. In addition, the PLCS and SLCS valves were assessed for the presence of any defects, wear, corrosion or operational issues.

2.6 Laboratory Program

The laboratory program is summarized in Table 1. Groundwater, leachate and surface water samples were submitted for laboratory analysis to Maxxam Analytics in St. John's, NL and Bedford, NS (Maxxam). The

leachate toxicity samples were submitted to Stantec Consulting Ltd. in St. John's, NL. Maxxam is a Canadian Association for Laboratory Accreditation (CALA) accredited laboratory. Maxxam has in-house quality assurance/quality control (QA/QC) programs for sample analysis, including replicates. The laboratory analytical results are provided in Tables C1-C19 located in Appendix D. Laboratory certificates of analysis are presented in Appendix E.

Table 1: Laboratory Program

Sampling Date	Sample Matrix	Sample ID	Analysis	QA/QC Samples		
				Original	Field Dup	Lab Dup
2-Sept-2011	Groundwater	MW93-1, MW93-1A, MW93-2, MW10-1, MW10-1A	BTEX, modified TPH, metals, PAHs, VOCs, PCBs, TSS, general chemistry	MW10-1A	DUP-A	MW93-1A (metals) and MW93-1 (turbidity)
2-Sept-2011	Surface Water	Surface-Up and Surface-Down	BTEX, modified TPH, metals, PAHs, VOCs, PCBs, TSS, general chemistry	None	None	None
2-Sept-2011	Leachate	PLCS and SLCS	BTEX, modified TPH, metals, PAHs, VOCs, PCBs, TSS, general chemistry, and toxicity (LT_{50})	None	None	None
7-Feb-2012	Leachate	PLCS and SLCS	BTEX, modified TPH, metals, PAHs, VOCs, PCBs, TSS, general chemistry, and toxicity (LT_{50})	SLCS	DUP (BTEX/ TPH, Metals, General Chemistry)	PLCS (BTEX/TPH, PAHs, VOCs), DUP (General Chemistry and Metals)

2.7 Quality Assurance/Quality Control (QA/QC) Sampling Program

In order to minimize cross-contamination during sampling, a field QA/QC program was followed. This included the cleaning of sampling equipment and the use of new nitrile gloves for each sampling location. Sterilized laboratory-supplied jars and bottles were used to collect the groundwater samples.

All samples collected during the sampling program were given unique sample IDs, logged onto a chain-of-custody form, placed inside a cooler at a temperature of approximately 4^{o}C, and transported to the laboratory for analysis.

The quality control program included the analysis of a blind field duplicate sample of groundwater and leachate collected simultaneously with the original sample and according to following ratios:

- Groundwater: one (1) of the six (6) groundwater samples submitted for analysis was duplicated in the field and analyzed for petroleum hydrocarbons, metals, PAHs, VOCs, PCBs and general chemistry. A blind field duplicate was collected at sample location MW10-1A.
- Leachate: one (1) of the two (2) leachate samples submitted for analysis was duplicated in the field and analyzed for petroleum hydrocarbons, metals, PCBs and general chemistry. A blind field duplicate was collected at sample location SLCS.

The laboratory QA/QC program consisted of matrix spikes, control samples, surrogates and blanks. Results of the laboratory QA/QC program are attached along with the laboratory certificates in Appendix E.

CHAPTER 3 RESULTS OF FIELD INVESTIGATION

3.1 Inspection and Survey of Landfill Cap

The landfill cover inspection and survey indicated the following:

- The landfill vents (V1 and V2) were in good condition with no obstructions;
- There was no evidence of erosion or animal burrows on the landfill cap;
- The slopes were in good condition, covered with vegetation and showed no signs of erosion;
- The lateral drains were dry and in good condition;
- The vegetation height exceeded the maximum recommended height of 0.3 metres during the September, 2011 site visit (i.e., alders were measured at a maximum height of 1.70 metres). However, during the February, 2012 leachate sampling event the vegetation present at the landfill measured at a maximum height of 0.14 meters indicating that the vegetation had been cut down; and,
- The elevation control points were measured in September, 2011 to be 20.218 (ECP1), 20.296 (ECP2), 20.731 (ECP3) and 20.994 (ECP4). When compared to the measurements collected by CRA in December 2010, the elevation control points decreased in elevation by an average of 155 mm.

Results of the inspection and survey of the landfill cap are summarized in Table C-1 in Appendix C.

3.2 Inspection Groundwater Drainage System

The groundwater drainage system inspection indicated the following:

- The four (4) clean-out pipes (C01 to C04) were clear of any debris/blockages;
- The outflow drainage pipe was observed to be cut off in the centre of a bank located on the neighboring liquid asphalt storage plant property;
- Water was flowing from the discharge pipe during the site visit; and,
- It appeared that the groundwater drainage system was functioning properly.

Results of the groundwater drainage system inspection are summarized in Table C-2 in Attachment C.

3.3 Groundwater Sampling

3.3.1 Petroleum Hydrocarbons in Groundwater

A total of seven (7) groundwater samples, including one (1) sample from each existing monitoring well (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW10-1A) and one (1) field duplicate sample (DUP-A), were collected and submitted for laboratory analysis of petroleum hydrocarbons (BTEX and modified TPH).

Results of the laboratory analysis for petroleum hydrocarbons in groundwater, as well as the applicable RBCA Tier I RBSLs, are provided in Table D-1, Appendix D. Results are summarized as follows:

- BTEX concentrations were non-detected in the analyzed groundwater samples;
- Modified TPH was detected in groundwater sample MW10-1 (0.4 mg/L) at a concentration below the Tier I RBSL of 20 mg/L; and,
- All other modified TPH concentrations were non-detect in the analyzed groundwater samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.3.2 Metals in Groundwater

A total of seven (7) groundwater samples, including one (1) sample from each existing monitoring well (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW10-1A) and one (1) field duplicate sample (DUP-A), were collected and submitted for laboratory analysis of metals.

Results of the laboratory analysis for metals in groundwater, as well as the applicable OMOE standards, are provided in Table D-2, Appendix D. As indicated in Table D-2, all metals parameters were either non-detected or were detected at concentrations below the OMOE standards, where such guidelines exist.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.3.3 PAHs in Groundwater

A total of seven (7) groundwater samples, including one (1) sample from each existing monitoring well (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW10-1A) and one (1) field duplicate sample (DUP-A), were collected and submitted for laboratory analysis of PAHs.

Results of the laboratory analysis for PAHs in groundwater, as well as the applicable OMOE standards, are provided in Table D-3, Appendix D. Results are summarized as follows:

- The concentration of acenapthene in groundwater sample MW93-1 (0.01 µg/L) was detected at a concentration below the OMOE standard of 600 µg/L;
- Concentrations of perylene were detected in groundwater samples MW93-2A (0.02 µg/L) and MW10-1A (0.04 µg/L), however, there is currently no applicable OMOE standard for perylene; and,
- All other PAH parameters were non-detect in the analyzed groundwater samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.3.4 VOCs in Groundwater

A total of seven (7) groundwater samples, including one (1) sample from each existing monitoring well (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW10-1A) and one (1) field duplicate sample (DUP-A), were collected and submitted for laboratory analysis of VOCs.

Results of the laboratory analysis for VOCs in groundwater, as well as the applicable OMOE standards, are provided in Table D-4, Appendix D. Results are summarized as follows:

- The concentrations of 1,2-Dichloropropane in groundwater samples MW10-1 (2 µg/L) and MW10-1A (7 µg/L) were detected at concentrations below the applicable OMOE standard (16 µg/L); and,
- All other VOC parameters were non-detect in the analyzed groundwater samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.3.5 PCBs in Groundwater

A total of seven (7) groundwater samples, including one (1) sample from each existing monitoring well (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW10-1A) and one (1) field duplicate sample (DUP-A), were collected and submitted for laboratory analysis of PCBs.

Results of the laboratory analysis for PCBs in groundwater, as well as the applicable OMOE standards, are provided in Table D-5, Appendix D. As indicated in Table C-5, total PCB concentrations were non-detect in each of the analyzed groundwater samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.3.6 Groundwater General Chemistry

A total of seven (7) groundwater samples, including one (1) sample from each existing monitoring well (MW93-1, MW93-1A, MW93-2, MW93-2A, MW10-1 and MW10-1A) and one (1) field duplicate sample (DUP-A), were collected and submitted for laboratory analysis of general chemistry.

Results of the laboratory analysis for general chemistry in groundwater, as well as the applicable OMOE standards, are provided in Table D-6, Appendix D. As indicated in Table D-6, all general chemistry parameters were either non-detected or were detected at concentrations below the OMOE standards, where such standards exist.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.4 Surface Water Sampling

3.4.1 Petroleum Hydrocarbons in Surface Water

Two (2) surface water samples (Surface-Up and Surface-Down) were collected and submitted for laboratory analysis of BTEX/modified TPH.

Results of the laboratory analysis for petroleum hydrocarbons in surface water, as well as the applicable CCME FAL guidelines, are provided in Table D-7, Appendix D. Results are summarized as follows:

- The concentration of toluene detected in surface water sample Surface-Up (0.002 mg/L) was equal to the CCME FAL guideline (0.002 mg/L).
- All other BTEX and modified TPH concentrations were non-detect in the analyzed surface water samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.4.2 Metals in Surface Water

Two (2) surface water samples (Surface-Up and Surface-Down) were collected and submitted for laboratory analysis of metals.

Results of the laboratory analysis for metals in surface water, as well as the applicable CCME FAL guidelines, are provided in Table D-8, Appendix D. Results are summarized as follows:

- Aluminum was detected in Surface-Up (1140 µg/L) and Surface-Down (941 µg/L) at concentrations exceeding the determined CCME FAL guideline of 5 µg/L (Surface-Up) and 100 µg/L (Surface-Down);
- Cadmium was detected in Surface-Up (0.066 µg/L) at a concentration exceeding the calculated CCME FAL guideline of 0.0114 µg/L;
- Chromium was detected in Surface-Up (2.3 µg/L) and Surface-Down (163 µg/L) at concentrations exceeding the guideline of 1 µg/L. It should be noted that no CCME FAL guideline exists for chromium, rather guidelines exist for hexavalent chromium (Cr (VI)) (1 µg/L) and trivalent chromium (Cr(III)) (8.9 µg/L). To be consistent with previous monitoring completed at the Site by others, CBCL compared the concentration of chromium in surface water to the more conservative concentration of 1 µg/L. The difference in concentrations of chromium between the Surface-Up and Surface-Down samples could be an indication of a potential active source area on-site. It should be noted that the concentrations of total chromium in leachate collected during the September, 2011 sampling event were <1 µg/L in the PLCS and 63 µg/L in the SLCS.
- Copper was detected in Surface-Up (5.3 µg/L) at a concentration exceeding the calculated CCME FAL guideline of 2 µg/L;
- Iron was detected in Surface-Up (16700 µg/L) and Surface-Down (4130 µg/L) at concentrations exceeding the CCME FAL guideline of 300 µg/L;
- Lead was detected in Surface-Up (2.16 µg/L) at a concentration exceeding the calculated CCME FAL of 1 µg/L; and
- All other metals concentrations were either non-detected or detected at concentrations below the CCME FAL guidelines in the analyzed surface water samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.4.3 PAHs in Surface Water

Two (2) surface water samples (Surface-Up and Surface-Down) were collected and submitted for laboratory analysis of PAHs.

Results of the laboratory analysis for PAHs in surface water, as well as the applicable CCME FAL guidelines, are provided in Table D-9, Appendix D. All PAH parameters were non-detect, and below the applicable CCME FAL guidelines, in the analyzed surface water samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.4.4 VOCs in Surface Water

Two (2) surface water samples (Surface-Up and Surface-Down) were collected and submitted for laboratory analysis of VOCs.

Results of the laboratory analysis for VOCs in surface water, as well as the applicable CCME FAL guidelines, are provided in Table D-10, Appendix D. All VOC parameters were non-detect, and below the applicable CCME FAL guidelines, in the analyzed surface water samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.4.5 PCBs in Surface Water

Two (2) surface water samples (Surface-Up and Surface-Down) were collected and submitted for laboratory analysis of PCBs.

Results of the laboratory analysis for PCBs in surface water, as well as the applicable CCME FAL guidelines, are provided in Table D-11, Appendix D. Total PCBs were non-detect in the analyzed surface water samples. Currently, there is no applicable CCME FAL guideline for total PCBs.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.4.6 Surface Water General Chemistry

Two (2) surface water samples (Surface-Up and Surface-Down) were collected and submitted for laboratory analysis of general chemistry parameters.

Results of the laboratory analysis for general chemistry in surface water, as well as the applicable CCME FAL guidelines, are provided in Table D-12, Appendix D. Results are summarized as follows:

- pH was measured outside the acceptable CCME FAL range (6.5 – 9.0) in surface water sample Surface-Up (5.99); and,
- All general chemistry parameters were either non-detected or were detected at concentrations below the CCME FAL guidelines, where such guidelines exist in the analyzed surface water samples.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

3.5 Leachate Sampling and Removal

3.5.1 Petroleum Hydrocarbons in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for laboratory analysis of BTEX/TPH and modified TPH. The leachate analytical results, as well as the applicable Schedule “A” NL Environmental Control and Sewage Regulations and the CCME FAL guidelines, are provided in Table D-13 in Attachment D. The laboratory certificates of analysis are provided in Appendix E.

Concentrations of BTEX/TPH were either non-detected or were measured at concentrations below the Schedule "A" regulations and the CCME FAL guidelines, where such guidelines exist.

3.5.2 Metals in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for laboratory analysis of metals. The leachate analytical results, as well as the referenced guidelines are provided in Table D-14 in Appendix D. The laboratory certificates of analysis are provided in Appendix E.

Several metals parameters (i.e., iron (PLCS - September, 2011) and zinc (SLCS - September, 2011), boron (SLCS - February, 2012 and DUP (duplicate of SLCS)) and total chromium (SLCS – September, 2011 and PLSC in February, 2012) exceeded the CCME FAL guidelines, but were below the Schedule "A" regulations, in the analyzed leachate samples, where such guidelines exist.

3.5.3 PAHs in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for laboratory analysis of PAHs. The leachate analytical results, as well as the referenced guidelines are provided in Table D-15 in Appendix D. The laboratory certificates of analysis are provided in Appendix E.

Concentrations of PAHs were either non-detected or were measured at concentrations below the CCME FAL guidelines and the Schedule "A" NL Environmental Control and Sewage Regulations, where such guidelines exist, with the exception of pyrene. During the winter (February, 2012) sampling event, pryene was found at concentrations which exceeded the CCME FAL guideline (0.025 µg/L) in both the PLCS (0.046 µg/L) and SLCS (0.085 µg/L).

3.5.4 VOCs in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for laboratory analysis of VOCs. The leachate analytical results, as well as the referenced guidelines are provided in Table D-16 in Appendix D. The laboratory certificates of analysis are provided in Appendix E.

Concentrations of VOCs were either non-detected or were measured at concentrations below the referenced guidelines, where such guidelines exist.

3.5.5 PCBs in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for laboratory analysis of PCBs. The leachate analytical results as well as the referenced guidelines are provided in Table D-17 in Appendix D. The laboratory certificates of analysis are provided in Appendix E.

Concentrations of PCBs were non-detect. It should be noted that no guidelines for total PAHs exist in either the Schedule "A" NL Environmental Control and Sewage Regulations or the CCME FAL guidelines.

3.5.6 General Chemistry in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for general chemistry laboratory analysis. The leachate analytical results, as well as the referenced guidelines are provided in Table D-18 in Appendix D. The laboratory certificates of analysis are provided in Appendix E.

Concentrations of general chemistry parameters were either non-detected or were measured at concentrations below the Schedule "A" regulations and the CCME FAL guidelines, where such guidelines exist, with the exception of phenols. During the winter (February, 2012) sampling event, phenols were found at concentrations which exceeded the CCME FAL guideline (0.004 µg/L) in both the PLCS (0.0053 µg/L) and SLCS (0.063 µg/L) and DUP (0.0087 µg/L).

3.5.7 Toxicity in Leachate

Two (2) leachate samples (PLCS and SLCS) during both the September and February sampling events were collected and submitted for laboratory analysis of toxicity. The leachate analytical results, as well as the applicable Schedule "A" NL Environmental Control and Sewage Regulations and the CCME FAL guidelines, are provided in Table D-19 in Appendix D. The laboratory certificates of analysis are provided in Appendix E.

Results of the toxicity testing indicated that the leachate from both the PLCS and SLCS was non-toxic to rainbow trout for the samples analyzed.

3.5.8 Leachate Pumping

Following review of the leachate analytical results and receipt of approval from DOEC on September 26, 2011, CBCL returned to the site on September 29 and 30, 2011 to conduct the first leachate pumping event.

On September 29, 2011, approximately 6,200 L of leachate was pumped from the PLCS valve chamber with a final in-flow rate of 14.7 L/min. Approximately 31,200 L of leachate was pumped from the SCLS valve chamber with a final measured in-flow rate of 125.0 L/min. On September 30, 2011, approximately 4,360 L of leachate was pumped from the PLCS valve chamber with a final in-flow rate of 14.1 L/min. Approximately 20,100 L of leachate was pumped from the SCLS valve chamber with a final measured in-flow rate of 15.3 L/min.

On February 13, 2012, approximately 5,670 L of leachate was pumped from the PLCS valve chamber with a final in-flow rate of 14.3 L/min. Approximately 8,900 L of leachate was pumped from the SCLS valve chamber with a final measured in-flow rate of 17.3 L/min. On February 14, 2012, approximately 4,450 L of leachate was pumped from the PLCS valve chamber with a final in-flow rate of 13.2 L/min. Approximately 5,735 L of leachate was pumped from the SCLS valve chamber with a final measured in-flow rate of 14.4 L/min.

Leachate removed from the PLCS and the SLCS was discharged to the drainage ditch located immediately west of the landfill. The leachate pumping results are summarized in Tables C-3 and C-4, Appendix C.

CHAPTER 4 CONCLUSIONS

Based on the information gathered and on observations made during this investigation, the CBCL 2011/2012 Monitoring and Maintenance Program at the Come by Chance Secure Landfill in Come By Chance, NL has revealed:

- The landfill cover inspection and survey completed in September, 2011 indicated that the landfill vents (V1 and V2) and the lateral drains were in good condition with no obstructions. As well, there was no evidence of erosion or animal burrows on the landfill cap. At the time of this inspection the vegetation height exceeded the maximum recommended height of 0.3 metres (i.e., alders were measured at a maximum height of 1.70 metres), however, this vegetation was noted to have been cut prior to the February, 2012 leachate sampling activities, measuring a maximum height of approximately 0.14 metres.
- The groundwater drainage system inspection completed in September, 2011 indicated that the four (4) clean-out pipes (C01 to C04) were clear of debris/blockages. The inspection also revealed and that the outflow drainage pipe was observed to be cut off in the center of a bank located on the neighbouring liquid asphalt storage plant property. Overall, it appeared that the groundwater drainage system was functioning properly.
- Results of the groundwater sampling program completed in September, 2011 revealed concentrations of BTEX, modified TPH, metals, PAHs, VOCs, PCBs, general chemistry and TSS parameters were either non-detected or detected at concentrations below the applicable guidelines.
- Results of the surface water sampling program completed in September, 2011 revealed that concentrations of BTEX, modified TPH, PAHs, VOCs, PCBs, general chemistry (with the exception of pH in the Surface-Up sample) and TSS parameters of the surface water samples analyzed were either non-detected or detected at concentrations below the applicable guidelines. Of the metals analysed, aluminum (Surface-Up and Surface-Down), cadmium (Surface-Up), chromium (Surface-Up and Surface-Down), copper (Surface-Up), iron (Surface-Up and Surface-Down), and lead (Surface-Up) exceeded the applicable guidelines in the analyzed upstream and/or downstream surface water samples. Of the metals which exceeded the applicable guidelines, chromium is the only metal where concentrations were seen to increase in the downstream sample in comparison with the upstream sample.
- Results of the leachate sampling program revealed that concentrations of BTEX and modified TPH, PAHs (with the exception of pyrene (PLCS and SLCS - February, 2012), VOCs, PCBs, general chemistry (with the exception of phenols (PLCS, SLCS and DUP – February, 2012) and TSS parameters were either non-detected or detected at concentrations below the applicable guidelines. Of the metals analyzed in the leachate samples, iron (PLSC - September, 2011), zinc (SLCS - September, 2011), boron (SLCS and

DUP - February, 2012) and total chromium (SLCS - September, 2011 and PLCS - February, 2012) exceeded the CCME FAL guidelines, but were below the Schedule "A" regulations, in the analyzed leachate samples.

- Results of the toxicity testing indicated that the leachate from both the PLCS and SLCS was non-toxic to rainbow trout.
- The volumes of leachate pumped from the collection chambers indicate that groundwater continues to infiltrate into the PLCS and SLCS. The actual volumes pumped as part of the 2011-2012 CBCL Limited leachate pumping activities are less than those of previous years, however a significant volume of leachate still collects into the collection system and requires regular pumping.

CHAPTER 5 RECOMMENDATIONS

Based on the results of the September, 2011 and February, 2012 monitoring and maintenance events conducted at the Come By Chance Secure Landfill, CBCL makes the following recommendations:

- The outflow drainage pipe for the groundwater drainage system should be extended from the bank and the grate that has been removed should be replaced;
- It is recommended that concentrations of chromium in surface water sampled during the next monitoring event be noted to determine whether the identified increase in concentration in the downstream sample in comparison with the upstream sample is an anomaly or could be indicative of a continued trend possibly indicating the presence of a source area on-site. It is also recommended that during future sampling events, chromium be analyzed for trivalent {CR(III)}and hexavalent chromium {CR(VI)}. This will allow for an improved understanding of the data and comparison to applicable guidelines as well as comparison to concentrations measured in leachate (which is analyzed for total chromium and CR VI); and,
- In accordance with the 2010 Pinchin Leblanc Revised OMM, based on leachate levels being measured to be lower than 0.3 m below the top of the valve chamber during two consecutive site visits (September, 2011 and February, 2012), the Tier I schedule (i.e., once per year in June) is recommended for leachate pumping as well as groundwater and surface water monitoring.

CHAPTER 6 CLOSURE

This report has been prepared for the sole benefit of the Newfoundland and Labrador Department of Environment and Conservation. The report may not be relied upon by any other person or entity without the express written consent of CBCL Limited and the Newfoundland and Labrador Department of Environment and Conservation.

Any use which a third party makes of this report and any reliance on decisions made based on it, are the responsibility of such third parties. CBCL Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this report.

Some of the information presented in this report was provided through existing documents and interviews. Although attempts were made, whenever possible, to obtain a minimum of two confirmatory sources of information, CBCL Limited in certain instances has been required to assume that the information provided is accurate.

The conclusions and recommendations presented represent the best judgement of the assessor based on current environmental standards and on the observed site conditions. Due to the nature of the investigation and the limited data available, the assessor cannot warrant against undiscovered environmental liabilities.

The conclusions are based on results from specific testing and/or sampling locations, and can only be extrapolated to an undefined limited area around these locations. The extent of the limited area depends on the soil and groundwater conditions, as well as the history of the site reflecting natural, construction and other activities. In addition, analysis has been carried out for a limited number of chemical parameters, and it should not be inferred that other chemical species are not present.

Should additional information become available, CBCL Limited requests that this information be brought to our attention so that we may re-assess the conclusions presented herein. This report was prepared by Colin LeFrense M.Sc. and reviewed by Stephanie Kilfoil, P.Eng.

Respectively Submitted,

CBCL Limited

Colin LeFrense, M.Sc.
Intermediate Project Professional

Stephanie Kilfoil, P.Eng.
Senior Project Professional

APPENDIX A

Figures

Date	Scale	Designed	Drawn	Checked	Approved	Project
JUN 19,12	N.T.S.					113080.00

CBCL LIMITED
Consulting Engineers
ISO 9001 CERTIFIED

COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

Figure 1

SITE LOCATION PLAN

DRAWING NAME: L:\113080.00 - COME BY CHANCE\FIGURES.DWG LAYOUT NAME: FIGURE1 PLOT DATE: June-19-12 3:06:16 PM CAD OPERATOR: BCROOKS

NORTH

MW96–1
MW93–1A

ABANDONED MILL BUILDING

GRAVEL ROAD

GRAVEL ROAD

GRAVEL PARKING AREA

CO2

CO3

CO4

MW10–1
MW10–1A

CO1

V2

SURFACE DOWN

DITCH

V1

PLCS
PLCS

GRAVEL ROAD

BROOK

SURFACE–UP

SWAMP/BOGGY

MW96–2
MW96–2A

ASPHALT ROAD

LEGEND:

- SURFACE WATER SAMPLE LOCATION
- MONITORING WELL LOCATION
- VALVE CHAMBER LOCATION
- VENT LOCATION
- CLEAN OUT LOCATION
- FENCE LINE
- GROUNDWATER DRAINAGE SYSTEM
- VEGETATION (BRUSHES GRASSES AND SHRUBS)

Date	Scale	Designed	Drawn	Checked	Approved	Contract
JUN. 19,12	1:1250					113080.00

CBCL LIMITED
Consulting Engineers
ISO 9001 CERTIFIED

COME BY CHANCE SECURE LANDFILL
COME BY CHANCE, NL

SITE PLAN

Figure
2

DRAWING NAME: L:\113080.00 – COME BY CHANCE\FIGURES.DWG LAYOUT NAME: FIGURE2 PLOT DATE: June–19–12 3:20:21 PM CAD OPERATOR: BCROOKS

APPENDIX B

Site Photographs

Photo 1: View of typical vegetative cover during September 2011 site visit.

Photo 2: View of groundwater drainage system clean-out pipe (CO3).

Photo 3: View of groundwater drainage system outflow drainage pipe. Note: the pipe has been cut off and the grate removed.

Photo 4: View of open PLCS chamber prior to sampling.

Photo 5: View of industrial development (liquid asphalt storage plant) located west of the landfill.

APPENDIX C

Field Forms

TABLE B-1 LANDFILL CAP INSPECTION FORM
Newfoundland and Labrador Department of Environment and Conservation
2011/12 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Date	Weather	Landfill Cap Inspection						Elevation Survey Control Points			
		Vegetative Height (m)	Vent Condition		Evidence of Erosion / Animal Burrows	Condition of Slopes	Condition of Lateral Drains	ECP 1	ECP 2	ECP 3	ECP 4
			V1	V2							
2-Sep-11	Sunny, +24 °C	0 - >1.5 m			None	Good condition; no erosion or damage					

Notes:

1. Elevations measured using an assumed benchmark of 15.960 m at top of PLCS valve chamber.
2. ECP = Elevation Control Point

TABLE B-2 GROUNDWATER DRAINAGE SYSTEM INSPECTION FORM
Newfoundland and Labrador Department of Environment and Conservation
2011/12 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Date	Weather	Outflow Drainage Pipe Condition	Outflow Drainage Pipe Flow Rate (L/min)	Clean Out Pipe Condition			
				CO1	CO2	CO3	CO4
2-Sep-11	Sunny, +24 °C	No grate; pipe has been cut off and located in the middle of a slope	Unknown *	No debris/blockages; Dry	No debris/blockages; Dry	No debris/blockages; Dry	No debris/blockages; Dry

Notes:

1. * Water was observed discharging from the drainage system, however, flow rate could not be measured to to presence of rocks/slope.

TABLE B-3 PRIMARY LEACHATE COLLECTION SYSTEM (PLCS) SAMPLING AND PUMPING INFORMATION
Newfoundland and Labrador Department of Environment and Conservation
2011/12 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

PLCS Leachate Sampling						PLCS Pumping				
Date	**Weather**	**Valve Condition**	**Initial Head (mbTOVC)**	**Sample Condition**	**Analysis Conducted**	**Date**	**Weather**	**Valve Condition**	**Final Flow Rate (L/min)**	**Pumping Time (hrs)**
2-Sep-11	Sunny, +24 °C	Unknown *	0.59	Clear, no odours or sheens	BTEX, TPH, Gen. Chem., Metals (including mercury and hex. Chromium), PAH, VOC, PCB, TSS, sulphides, phenolics, toxicity	29-Sep-11	Sunny	Good	14.7	3.5
						30-Sep-11	Raining	Good	14.1	3
7-Feb-12	Sunny, -2 °C	Unknown *	0.83	Clear, no odours or sheens	BTEX, TPH, Gen. Chem., Metals (including mercury and hex. Chromium), PAH, VOC, PCB, TSS, sulphides, phenolics, toxicity	13-Feb-12	Sunny	Good	14.3	2.5
						14-Feb-12	Sunny	Good	13.2	2.5

Notes:

1. mbTOVC = metres below top of valve chamber
2. * Unable to inspect valve condition during sampling as the PLCS valve chamber was filled with leachate.
3. Samples must always be maintained at 4 °C and shipped to the laboratory within 3 days of sampling.
4. Elevation of top of PLCS Valve Chamber = 15.960 m

Bottles required for laboratory analysis:

BTEX: 3 x 40 mL clear glass vial (filled with no headspace)
TPH: 2 x 250 mL clear glass bottle (filled to neck)
Gen. Chem: 1 x 200 mL plastic bottle
Metals: 1 x 50 mL plastic tube
Mercury: 1 x 100 mL amber glass bottle
Hex. Chromium: 1 x 35 mL plastic bottle
PAHs: 2 x 250 mL clear glass bottle (fill to neck)
VOCs: 3 x 40 mL clear glass vial (filled with no headspace)
PCBs: 2 x 250 mL clear glass bottle (fill to neck)
TSS: 1 x 500 mL plastic bottle
Phenolics: 1 x 100 mL amber glass bottle
Sulphides: 1 x 200 mL plastic bottle
Toxicity: 1 x 20 L plastic food grade

TABLE B-4 SECONDARY LEACHATE COLLECTION SYSTEM (SLCS) SAMPLING AND PUMPING INFORMATION
Newfoundland and Labrador Department of Environment and Conservation
2011/12 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

SLCS Leachate Sampling						SLCS Pumping Event				
Date	**Weather**	**Valve Condition**	**Initial Head (mbTOVC)**	**Sample Condition**	**Analysis Conducted**	**Date**	**Weather**	**Valve Condition**	**Final Flow Rate (L/min)**	**Pumping Time (hrs)**
2-Sep-11	Sunny, +24 °C	Unknown *	0.55	Clear, no odours or sheens	BTEX, TPH, Gen. Chem., Metals (including mercury and hex. Chromium), PAH, VOC, PCB, TSS, sulphides, phenolics, toxicity	29-Sep-11	Sunny	Good	125	3.5
						30-Sep-11	Rainy	Good	15.3	3
7-Feb-12	Sunny, -2°C	Unknown *	0.72	Clear, no odours or sheens	BTEX, TPH, Gen. Chem., Metals (including mercury and hex. Chromium), PAH, VOC, PCB, TSS, sulphides, phenolics, toxicity	13-Feb-12	Sunny	Good	17.3	3.5
						14-Feb-12	Sunny	Good	14.4	3.5

Notes:

1. mbTOVC = metres below top of valve chamber
2. * Unable to inspect valve condition during sampling as the SLCS valve chamber was filled with leachate.
3. Samples must always be maintained at 4 °C and shipped to the laboratory within 3 days of sampling.
4. Elevation of top of SLCS valve chamber = 15.95 m

Bottles required for laboratory analysis:

BTEX: 3 x 40 mL clear glass vial (filled with no headspace)

TPH: 2 x 250 mL clear glass bottle (filled to neck)

Gen. Chem: 1 x 200 mL plastic bottle

Metals: 1 x 50 mL plastic tube

Mercury: 1 x 100 mL amber glass bottle

Hex. Chromium: 1 x 35 mL plastic bottle

PAHs: 2 x 250 mL clear glass bottle (fill to neck)

VOCs: 3 x 40 mL clear glass vial (filled with no headspace)

PCBs: 2 x 250 mL clear glass bottle (fill to neck)

TSS: 1 x 500 mL plastic bottle

Phenolics: 1 x 100 mL amber glass bottle

Sulphides: 1 x 200 mL plastic bottle

Toxicity: 1 x 20 L plastic food grade

TABLE B-5 **SURFACE WATER SAMPLING AND ANALYSIS INFORMATION**
Newfoundland and Labrador Department of Environment and Conservation
2011/12 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Date	Weather	Surface Water Samples			
		Surface Up		Surface Down	
		Sample Condition	Analysis Conducted	Sample Condition	Analysis Conducted
2-Sep-11	Sunny, +24 °C	Clear, manganese sheen, no odours	BTEX, TPH, Gen. Chem., Metals (including mercury), PAH, VOC, PCB, TSS	Clear, manganese sheen, no odours	BTEX, TPH, Gen. Chem., Metals (including mercury), PAH, VOC, PCB, TSS

Notes:

1. Samples must always be maintained at 4 °C and shipped to the laboratory within 3 days of sampling.

Bottles required for laboratory analysis:

BTEX: 3 x 40 mL clear glass vial (filled with no headspace)

TPH: 2 x 250 mL clear glass bottle (filled to neck)

Gen. Chem: 1 x 200 mL plastic bottle

Metals: 1 x 50 mL plastic tube

Mercury: 1 x 100 mL amber glass bottle

PAHs: 2 x 250 mL clear glass bottle (fill to neck)

VOCs: 3 x 40 mL clear glass vial (filled with no headspace)

PCBs: 2 x 250 mL clear glass bottle (fill to neck)

TSS: 1 x 500 mL plastic bottle

TABLE B-6 GROUNDWATER SAMPLING AND ANALYSIS INFORMATION
Newfoundland and Labrador Department of Environment and Conservation
2011/12 Monitoring and Maintenance Program, Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Date	Weather	Groundwater Samples																	
		MW93-1			MW93-1A			MW93-2			MW93-2A			MW10-1			MW10-1A		
		Water Depth (mbTOC)	Sample Condition	Analysis Conducted	Water Depth (mbTOC)	Sample Condition	Analysis Conducted	Water Depth (mbTOC)	Sample Condition	Analysis Conducted	Water Depth (mbTOC)	Sample Condition	Analysis Conducted	Water Depth (mbTOC)	Sample Condition	Analysis Conducted	Water Depth (mbTOC)	Sample Condition	Analysis Conducted
2-Sep-11	Sunny, +24 °C	1.921	Clear, no sheen, no odours	BTEX, TPH, Gen. Chem., Metals (inc. mercury), PAH, VOC, PCB, TSS	2.204	Clear, no sheen, no odours	BTEX, TPH, Gen. Chem., Metals (inc. mercury), PAH, VOC, PCB, TSS			BTEX, TPH, Gen. Chem., Metals (inc. mercury), PAH, VOC, PCB, TSS			BTEX, TPH, Gen. Chem., Metals (inc. mercury), PAH, VOC, PCB, TSS	3.551	Silty, no sheen, no odours	BTEX, TPH, Gen. Chem., Metals (inc. mercury), PAH, VOC, PCB, TSS	3.662	Silty, no sheen, no odours	BTEX, TPH, Gen. Chem., Metals (inc. mercury), PAH, VOC, PCB, TSS

Notes:

1. Samples must always be maintained at 4 °C and shipped to the laboratory within 3 days of sampling.
2. mbtoc = metres below top of PVC casing

Bottles required for laboratory analysis:

BTEX: 3 x 40 mL clear glass vial (filled with no headspace)
TPH: 2 x 250 mL clear glass bottle (filled to neck)
Gen. Chem: 1 x 200 mL plastic bottle
Metals: 1 x 50 mL plastic tube
Mercury: 1 x 100 mL amber glass bottle
PAHs: 2 x 250 mL clear glass bottle (fill to neck)
VOCs: 3 x 40 mL clear glass vial (filled with no headspace)
PCBs: 2 x 250 mL clear glass bottle (fill to neck)
TSS: 1 x 500 mL plastic bottle

APPENDIX D

Analytical Results Tables

TABLE C-1 **PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID	Date Collected	BTEX Parameters (mg/L)				Total Petroleum Hydrocarbons (mg/L or ppm)					Resemblance
		Benzene	Toluene	Ethyl-Benzene	Xylenes	C6 - C10 (less BTEX)	>C10-C16	>C16-C21	>C21-<C32	Modified TPH (Tier1)	
MW93-1	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
MW93-1A	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
MW93-2	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
MW93-2A	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
MW10-1	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	0.4	0.4	Possible lube oil fraction.
MW10-1A	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
DUP- A (FD of MW10-1A)		<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.05	0.1	0.1	-
RBCA Tier I		6.9	20	20	20	-	-	-	-	20	-

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; FD = blind field duplicate QA/QC sample; "-' = no guideline available or parameter not analyzed
2. Modified TPH = total petroleum hydrocarbons excluding total BTEX
3. RBCA Tier I: Atlantic RBCA Tier I Risk Based Screening Levels (RBSLs) for Groundwater at a commercial, non-potable site with coarse grain soil. (Sept. 2003)
4. **Shaded/bolded results indicate an exceedance of applicable guidelines**

TABLE C-2 **METALS CONCENTRATIONS IN GROUNDWATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**OMOE Standards [1]** **(µg/L)**	**MW93-1** 2-Sep-11 (µg/L)	**MW93-1A** 2-Sep-11 (µg/L)	**MW93-1A** (LD) (µg/L)	**MW93-2** 2-Sep-11 (µg/L)	**MW93-2A** 2-Sep-11 (µg/L)	**MW10-1** 2-Sep-11 (µg/L)	**MW10-1A** 2-Sep-11 (µg/L)	**DUP-A** (FD of MW10-1A) (µg/L)
Parameters										
Aluminum	5	-	73.7	5.9	5.7	<5	86.6	41.8	74.5	68.3
Antimony	1	20000	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	1	1900	<1	<1	<1	1.2	<1	<1	<1	<1
Barium	1	29000	77.9	68.6	67.6	171	54.1	50.2	28.8	29.4
Beryllium	1	67	<1	<1	<1.0	<1	<1	<1	<1	<1
Bismuth	2	-	<2	<2	<2.0	<2	<2	<2	<2	<2
Boron	50	45000	63	96	97	1160	317	<50	<50	<50
Cadmium	0.017	2.7	<0.017	<0.017	<0.017	0.038	0.304	0.032	0.039	0.036
Calcium	100	-	43500	26300	25600	77300	20600	51100	20600	20800
Chromium	1	810	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	0.4	66	0.44	<0.4	<0.4	0.56	1.19	4.91	1.54	2.07
Copper	2	87	<2	<2	<2	<2	<2	7.3	9.4	9.1
Iron	50	-	65	<50	<50	<50	3000	50	96	92
Lead	0.5	25	<0.5	<0.5	<0.50	<0.5	1.17	<0.5	<0.5	2.66
Magnesium	100	-	16400	12200	12100	15600	5220	4540	2190	2150
Manganese	2	-	60	259	258	1120	4190	239	106	139
Mercury	0.013	0.29	<0.013	0.035	-	0.015	<0.013	<0.013	0.092	0.099
Molybdenum	2	9200	16.3	19.2	18.8	<2	<2	2.5	8.5	6.1
Nickel	2	490	<2	<2	<2	<2	<2	6.5	8.9	8.3
Potassium	100	-	2680	1830	1840	1560	1040	1360	714	693
Selenium	1	63	<1	<1	<1	<1	<1	<1	<1	<1
Silver	0.1	1.5	<0.1	<0.1	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	100	2300000	76100	68600	68400	21000	11000	6570	4670	4600
Strontium	2	-	263	192	190	210	70.6	106	46.9	45.4
Thallium	0.1	510	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	2	-	<2	<2	<2	<2	<2	<2	<2	<2
Titanium	2	-	2.6	<2	<2	<2	<2	<2	2.1	<2
Uranium	0.1	420	3.06	0.4	0.42	0.24	<0.1	0.43	<0.1	<0.1
Vanadium	2	250	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	5	1100	<5	<5	<5	5	568	9	8.9	10.1

Notes:
1. RDL = Laboratory reportable detection limit; <X: Below RDL; LD = laboratory QA/QC duplicate sample; FD = blind field duplicate QA/QC sample; "-' = no guideline available or parameter not analyzed
2. 1 = Ontario Ministry of the Environment's Soil, Ground Water and Sediment Standards for use under Part XV.1 of the *Environmental Protection Act,* April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.
3. **Shaded/bolded result indicate an exceedance of the OMOE Standard**

TABLE C-3 **POLYCYCLIC AROMATIC HYDROCARBONS (PAH) CONCENTRATIONS IN GROUNDWATEF**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**OMOE** **Standards** [1] **(µg/L)**	**MW93-1** 2-Sep-11 (µg/L)	**MW93-1A** 2-Sep-11 (µg/L)	**MW93-2** 2-Sep-11 (µg/L)	**MW93-2A** 2-Sep-11 (µg/L)	**MW10-1** 2-Sep-11 (µg/L)	**MW10-1A** 2-Sep-11 (µg/L)	**DUP-A** (FD of MW10-1A) (µg/L)
Parameters									
1-Methylnaphthalene	0.05	1800	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-Methylnaphthalene	0.05	1800	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	0.01	600	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acenaphthylene	0.01	1.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Anthracene	0.01	2.4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(a)anthracene	0.01	4.7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(a)pyrene	0.01	0.81	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	0.01	0.75	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(g,h,i)perylene	0.01	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(j)fluoranthene	0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	0.01	0.4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chrysene	0.01	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dibenz(a,h)anthracene	0.01	0.52	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluoranthene	0.01	130	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fluorene	0.01	400	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	0.01	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	0.2	1400	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perylene	0.01	-	<0.01	<0.01	<0.01	0.02	<0.01	0.04	0.04
Phenanthrene	0.01	580	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pyrene	0.01	68	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Notes:
1. RDL = Laboratory reportable detection limit; <X: Below RDL; FD = blind field duplicate QA/QC sample; "-' = no guideline available or parameter not analyzed
2. 1 = Ontario Ministry of the Environment's Soil, Ground Water and Sediment Standards for use under Part XV.1 of the *Environmental Protection Act*, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.
3. **Shaded/bolded result indicate an exceedance of the OMOE Standard**

TABLE C-4

VOLATILE ORGANIC COMPOUNDS (VOCs) CONCENTRATIONS IN GROUNDWATER
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**OMOE Standards** [1] **(µg/L)**	**MW93-1** 2-Sep-11 (µg/L)	**MW93-1A** 2-Sep-11 (µg/L)	**MW93-2** 2-Sep-11 (µg/L)	**MW93-2A** 2-Sep-11 (µg/L)	**MW10-1** 2-Sep-11 (µg/L)	**MW10-1A** 2-Sep-11 (µg/L)	**DUP-A** (FD of MW10-1A) (µg/L)
Parameters									
1,2-Dichlorobenzene	0.7	4600	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
1,3-Dichlorobenzene	1	9600	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	1	8	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	630	<1	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	1	640	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	1	3.2	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	1	640	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	3	320	<3	<3	<3	<3	<3	<3	<3
1,1-Dichloroethylene	0.7	1.6	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
1,2-Dichloroethane	1	320	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	1	16	<1	<1	<1	<1	2	7	7
Benzene	1	44	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1	85000	<1	<1	<1	<1	<1	<1	<1
Bromoform	1	380	<1	<1	<1	<1	<1	<1	<1
Bromomethane	4	5.6	<4	<4	<4	<4	<4	<4	<4
Carbon Tetrachloride	1	0.79	<1	<1	<1	<1	<1	<1	<1
Chloroethane	10	-	<10	<10	<10	<10	<10	<10	<10
Chloroform	1	2.4	<1	<1	<1	<1	<1	<1	<1
Chloromethane	10	-	<10	<10	<10	<10	<10	<10	<10
cis-1,2-Dichloroethylene	3	1.6	<3	<3	<3	<3	<3	<3	<3
cis-1,3-Dichloropropene	3	5.2	<3	<3	<3	<3	<3	<3	<3
Dibromochloromethane	1	82000	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	2300	<1	<1	<1	<1	<1	<1	<1
Ethylene Dibromide	1	0.25	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride(Dichloromethane)	4	610	<4	<4	<4	<4	<4	<4	<4
o-Xylene	1	4200	<1	<1	<1	<1	<1	<1	<1
p+m-Xylene	3	4200	<3	<3	<3	<3	<3	<3	<3
Styrene	1	1300	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	1	1.6	<1	<1	<1	<1	<1	<1	<1
Toluene	1	18000	<1	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	3	1.6	<3	<3	<3	<3	<3	<3	<3
trans-1,3-Dichloropropene	1	5.2	<1	<1	<1	<1	<1	<1	<1
Trichloroethylene	1	1.6	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane (FREON 11)	10	2500	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	0.7	0.5	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7

Notes:
1. RDL = Laboratory reportable detection limit; <X: Below RDL; FD = blind field duplicate QA/QC sample; "-' = no guideline available or parameter not analyzed
2. 1 = Ontario Ministry of the Environment's Soil, Ground Water and Sediment Standards for use under Part XV.1 of the *Environmental Protection Act*, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.

3. Shaded/Bolded result indicate an exceedance of the OMOE Standard

TABLE C-5 **POLYCHLORINATED BYPHENYLS (PCBs) CONCENTRATIONS IN GROUNDWATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**OMOE** **Standards [1]** **(µg/L)**	**MW93-1** 2-Sep-11 (µg/L)	**MW93-1A** 2-Sep-11 (µg/L)	**MW93-2** 2-Sep-11 (µg/L)	**MW93-2A** 2-Sep-11 (µg/L)	**MW10-1** 2-Sep-11 (µg/L)	**MW10-1A** 2-Sep-11 (µg/L)	**DUP-A** (FD of MW10-1A) (µg/L)
Parameters									
Total PCB	0.05	7.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
1. RDL = Laboratory reportable detection limit; <X: Below RDL; FD = blind field duplicate QA/QC sample; "-' = no guideline available or parameter not analyzed
2. 1 = Ontario Ministry of the Environment's Soil, Ground Water and Sediment Standards for use under Part XV.1 of the *Environmental Protection Act*, April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.
3. Shaded/bolded result indicate an exceedance of the OMOE Standard

TABLE C-6 **GENERAL WATER CHEMISTRY IN GROUNDWATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Parameter	Units	RDL	OMOE Standards [1]	Sample ID							
				MW93-1	MW93-1 (LD)	MW93-1A	MW93-2	MW93-2A	MW10-1	MW10-1A	DUP-A (FD of MW10-1A)
			Sample Date:	2-Sep-11		2-Sep-11	2-Sep-11	2-Sep-11	2-Sep-11	2-Sep-11	
Alkalinity	mg/L	30	-	310	-	220	210	61	140	51	51.0
Sulphate	mg/L	2	-	48	-	38	78	36	20	22	22
Chloride	mg/L	1	2300	11	-	16	20	16	6	3	3.0
Reactive Silica	mg/L	0.5	-	6.9	-	7.7	19	11	8.0	10	10
Orthophosphate (as P)	mg/L	0.01	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite + Nitrate	mg/L	0.05	-	<0.05	-	<0.05	<0.05	<0.05	0.09	0.11	0.08
Nitrite	mg/L	0.01	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate	mg/L	0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	0.1	0.08
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	-	<0.05	-	<0.05	<0.05	0.25	0.28	<0.05	<0.05
Colour	TCU	5	-	<5	-	<5	<5	120	9	22	18
Turbidity	NTU	0.1	-	>1000	>1000	1.1	3.9	190	320	>1000	>1000
Conductivity	µS/cm	1	-	630	-	500	570	230	320	150	150
pH	n/a	n/a	-	8.12	-	8.22	7.90	7.06	7.85	7.14	7.20
Saturation pH @ 4C	n/a	n/a	-	7.57	-	7.92	7.47	8.52	7.76	8.57	8.56
Saturation pH @ 20C	n/a	n/a	-	7.32	-	7.67	7.23	8.27	7.51	8.32	8.31
Total Organic Carbon (C)	mg/L	0.5	-	930	-	<0.5	1.0	17	18	15	18
TDS	mg/L	1	-	389	-	302	361	145	185	95	95
TSS	mg/L	1	-	810	-	11	19	330	400	7000	9400
Bicarbonate	mg/L	1	-	304	-	216	210	61	144	50	51
Carbonate	mg/L	1	-	4	-	3	2	<1	<1	<1	<1
Hardness (as $CaCO_3$)	mg/L	1	-	180	-	120	260	73	150	61	61
Cation Sum	me/L	n/a	-	6.90	-	5.35	6.10	2.09	3.27	1.43	1.44
Anion Sum	me/L	n/a	-	7.47	-	5.61	6.42	2.42	3.48	1.57	1.59
Ion Balance	%	n/a	-	3.97	-	2.37	2.56	7.32	3.11	4.67	4.95
Langlier Index @ 20C	n/a	n/a	-	0.798	-	0.554	0.675	-1.21	0.336	-1.18	-1.11
Langlier Index @ 4C	n/a	n/a	-	0.550	-	0.305	0.426	-1.46	0.0860	-1.43	-1.36

Notes:
1. RDL = Laboratory reportable detection limit; N/A = not available; <X: Below RDL; LD = laboratory QA/QC duplicate sample; FD = blind field duplicate QA/QC sample; "-' = no guideline
2. 1 = Ontario Ministry of the Environment's Soil, Ground Water and Sediment Standards for use under Part XV.1 of the *Environmental Protection Act,* April 15, 2011, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.
3. **Shaded/bolded results indicate an exceedance of applicable OMOE Standard**

TABLE C-7 **PETROLEUM HYDROCARBON CONCENTRATIONS IN SURFACE WATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID	Date Collected	BTEX Parameters (mg/L)				Total Petroleum Hydrocarbons (mg/L or ppm)					Resemblance
		Benzene	Toluene	Ethyl-Benzene	Xylenes	C6 - C10 (less BTEX)	>C10-C16	>C16-C21	>C21-<C32	Modified TPH (Tier1)	
Surface-Up	2-Sep-11	<0.001	0.002	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
Surface-Down	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.05	<0.1	<0.1	-
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.05	0.1	0.1	-
CCME FAL [1]		0.37	0.002	0.09	-	-	-	-	-	-	-

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. Modified TPH = total petroleum hydrocarbons excluding total BTEX
3. 1 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
4. **Shaded/Bolded result indicate an exceedance of the CCME FAL**

TABLE C-8 **METALS CONCENTRATIONS IN SURFACE WATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**CCME FAL [1]** **(µg/L)**	**Surface-Up** 2-Sep-11 (µg/L)	**Surface-Down** 2-Sep-11 (µg/L)
Parameters				
Aluminum	5	5	**1140**	**-**
		100	**-**	**941**
Antimony	1	-	<1	<1
Arsenic	1	5	2.5	2.5
Barium	1	-	132	179
Beryllium	1	-	<1	<1
Bismuth	2	-	<2	<2
Boron	50	-	<50	<50
Cadmium	0.017	0.0114	**0.066**	-
		0.0523	**-**	0.035
Calcium (Ca)	100	-	8230	62300
Chromium*	1	Cr(III) - 8.9 / Cr(VI) - 1.0	**2.3**	**163**
Cobalt	0.4	-	1.9	1.98
Copper	2	2	**5.3**	-
		3.72	**-**	3
Iron	50	300	**16700**	**4130**
Lead	0.5	1	**2.16**	-
		6.25	**-**	0.69
Magnesium (Mg)	100	-	1960	3830
Manganese	2	-	1460	1760
Mercury (Hg)	0.013	0.026	0.023	<0.013
Molybdenum	2	73	<2	<2
Nickel	2	37.31	4.8	-
		143.05	-	<2
Potassium (K)	100	-	2620	1030
Selenium	1	1	<1	<1
Silver	0.1	0.1	<0.1	<0.1
Sodium (Na)	100	-	4980	5820
Strontium	2	-	35.5	110
Thallium	0.1	0.8	<0.1	<0.1
Tin	2	-	<2	<2
Titanium	2	-	35.2	37.2
Uranium	0.1	-	<0.1	0.35
Vanadium	2	-	19.9	2.8
Zinc	5	30	28.1	12.4

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed;

2. 1 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.

3. **Shaded/bolded result indicate an exceedance of the CCME FAL**

Aluminum guidelines = 5 µg/L at pH < 6.5; or 100 µg/L at pH ≥ 6.5

Cadmium guideline = 10^(0.86*(LOG(hardness))-3.2)

Copper guideline = e0.8545[ln(hardness)]-1.465 * 0.2 µg/L

Lead guideline = e1.273[ln(hardness)]-4.705 µg/L

Nickel guideline = e0.76[ln(hardness)]+1.06 µg/L

* - Analysed as total chromium. CCME provides guidance for two states of oxidation (trivalent Cr(III) & hexavalent Cr(VI)), but currently provides no FWAL guidance for total chromium.

TABLE C-9 **POLYCYCLIC AROMATIC HYDROCARBONS (PAH) CONCENTRATIONS IN SURFACE WATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**CCME FAL [1]** **(µg/L)**	**Surface-Up** 2-Sep-11 (µg/L)	**Surface-Down** 2-Sep-11 (µg/L)
Parameters				
1-Methylnaphthalene	0.05	-	<0.05	<0.05
2-Methylnaphthalene	0.05	-	<0.05	<0.05
Acenaphthene	0.01	5.8	<0.01	<0.01
Acenaphthylene	0.01	-	<0.01	<0.01
Anthracene	0.01	0.012	<0.01	<0.01
Benzo(a)anthracene	0.01	0.018	<0.01	<0.01
Benzo(a)pyrene	0.01	0.015	<0.01	<0.01
Benzo(b)fluoranthene	0.01	-	<0.01	<0.01
Benzo(g,h,i)perylene	0.01	-	<0.01	<0.01
Benzo(j)fluoranthene	0.01	-	<0.01	<0.01
Benzo(k)fluoranthene	0.01	-	<0.01	<0.01
Chrysene	0.01	-	<0.01	<0.01
Dibenz(a,h)anthracene	0.01	-	<0.01	<0.01
Fluoranthene	0.01	0.04	<0.01	<0.01
Fluorene	0.01	3	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	0.01	-	<0.01	<0.01
Naphthalene	0.2	1.1	<0.2	<0.2
Perylene	0.01	-	<0.01	<0.01
Phenanthrene	0.01	0.4	<0.01	<0.01
Pyrene	0.01	0.025	<0.01	<0.01

Notes:

1. RDL = Laboratory reportable detection limit; n/a = not applicable; <X: Below RDL; '-' = no guideline available or parameter not analyzed

2. 1 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.

3. Shaded result indicate an exceedance of the CCME FAL

TABLE C-10 **VOLATILE ORGANIC COMPOUNDS (VOCs) CONCENTRATIONS IN SURFACE WATEI**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**CCME FAL [1]** **(µg/L)**	**Surface-Up** 2-Sep-11 (µg/L)	**Surface-Down** 2-Sep-11 (µg/L)
Parameters				
1,2-Dichlorobenzene	0.5	0.7	<0.5	<0.7
1,3-Dichlorobenzene	1	150	<1	<1
1,4-Dichlorobenzene	1	26	<1	<1
Chlorobenzene	1	1.3	<1	<1
1,1,1-Trichloroethane	1	-	<1	<1
1,1,2,2-Tetrachloroethane	1	-	<1	<1
1,1,2-Trichloroethane	1	-	<1	<1
1,1-Dichloroethane	2	-	<2	<3
1,1-Dichloroethylene	0.5	-	<0.5	<0.7
1,2-Dichloroethane	1	100	<1	<1
1,2-Dichloropropane	1	-	<1	<1
Benzene	1	370	<1	<1
Bromodichloromethane	1	-	<1	<1
Bromoform	1	-	<1	<1
Bromomethane	3	-	<3	<4
Carbon Tetrachloride	1	13.3	<1	<1
Chloroethane	8	-	<8	<10
Chloroform	1	1.8	<1	<1
Chloromethane	8	-	<8	<10
cis-1,2-Dichloroethylene	2	-	<2	<3
cis-1,3-Dichloropropene	2	-	<2	<3
Dibromochloromethane	1	-	<1	<1
Ethylbenzene	1	90	<1	<1
Ethylene Dibromide	1	-	<1	<1
Methylene Chloride(Dichloromethane)	3	98.1	<3	<4
o-Xylene	1	-	<1	<1
p+m-Xylene	2	-	<2	<3
Styrene	1	72	<1	<1
Tetrachloroethylene	1	110	<1	<1
Toluene	1	2	2	<1
trans-1,2-Dichloroethylene	2	-	<2	<3
trans-1,3-Dichloropropene	1	-	<1	<1
Trichloroethylene	1	21	<1	<1
Trichlorofluoromethane (FREON	8	-	<8	<10
Vinyl Chloride	0.5	-	<0.5	<0.7

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed

2. 1 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.

3. Shaded/bolded result indicate an exceedance of the CCME FAL

TABLE C-11 **POLYCHLORINATED BYPHENYLS (PCBs) CONCENTRATIONS IN SURFACE WATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: **Sample Date:** **Units:**	**RDL** **(µg/L)**	**CCME FAL [1]** **(µg/L)**	**Surface-Up** 2-Sep-11 (µg/L)	**Surface-Down** 2-Sep-11 (µg/L)
Parameters				
Total PCB	0.05	-	<0.05	<0.05

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed; FD =

2. 1 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.

3. Shaded/bolded result indicate an exceedance of the CCME FAL

TABLE C-12 **GENERAL WATER CHEMISTRY IN SURFACE WATER**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Parameter	Units	RDL	CCME FAL [1]	Sample ID	
				Surface-Up	Surface-Down
			Sample Date:	2-Sep-11	2-Sep-11
Alkalinity	mg/L	30	-	17	160
Sulphate	mg/L	2	-	7	12
Chloride	mg/L	1	-	7	8
Reactive Silica	mg/L	0.5	-	3.5	1.8
Orthophosphate (as P)	mg/L	0.01	-	<0.01	<0.01
Nitrite + Nitrate	mg/L	0.05	-	<0.05	1.6
Nitrite	mg/L	0.01	0.06	<0.01	<0.01
Nitrate	mg/L	0.05	13	<0.05	1.6
Nitrogen (Ammonia Nitroge	mg/L	0.05	-	<0.05	<0.05
Colour	TCU	5	-	140	32
Turbidity	NTU	0.1	-	30	5.6
Conductivity	µS/cm	1	-	72	340
pH	n/a	n/a	6.5 - 9.0	**5.99**	7.64
Saturation pH @ 4C	n/a	n/a	-	9.43	7.64
Saturation pH @ 20C	n/a	n/a	-	9.18	7.39
Total Organic Carbon (C)	mg/L	0.5	-	41	2.8
TDS	mg/L	1	-	63	204
TSS	mg/L	1	-	840	160
Bicarbonate	mg/L	1	-	17	159
Carbonate	mg/L	1	-	<1	<1
Hardness (as $CaCO_3$)	mg/L	1	-	29	170
Cation Sum	me/L	n/a	-	1.45	3.85
Anion Sum	me/L	n/a	-	0.680	3.80
Ion Balance	%	n/a	-	36.20	0.650
Langlier Index @ 20C	n/a	n/a	-	-3.19	0.248
Langlier Index @ 4C	n/a	n/a	-	-3.44	-0.00200

Notes:
1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. 1 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
3. **Shaded/bolded result indicate an exceedance of the CCME FAL**

TABLE C-13 PETROLEUM HYDROCARBON CONCENTRATIONS IN LEACHATE
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID	Date Collected	BTEX Parameters (mg/L)				Total Petroleum Hydrocarbons (mg/L)					Resemblance
		Benzene	Toluene	Ethyl-Benzene	Xylenes	C6 - C10 (less BTEX)	>C10-C16	>C16-C21	>C21-<C32	Modified TPH (Tier1)	
PLCS	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	0.05	<0.05	<0.1	<0.1	-
SLCS	2-Sep-11	<0.001	<0.001	<0.001	<0.002	<0.01	0.05	<0.05	<0.1	<0.1	-
PLCS	7-Feb-12	<0.001	<0.001	<0.001	<0.002	<0.01	0.05	<0.05	<0.1	<0.1	-
SLCS	7-Feb-12	<0.001	<0.001	<0.001	<0.002	<0.01	0.052	0.056	<0.1	0.21	One Product in Fuel/Lube Oil Range
DUP	7-Feb-12	<0.001	<0.001	<0.001	<0.002	<0.01	0.051	0.06	<0.1	0.11	One Product in Fuel/Lube Oil Range
RDL		0.001	0.001	0.001	0.002	0.01	0.05	0.05	0.1	0.1	-
Schedule "A" of the NL Regulations [1]		-	-	-	-	-	-	-	-	15	-
CCME FAL [2]		0.37	0.002	0.09	-	-	-	-	-	-	-

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. Modified TPH = total petroleum hydrocarbons excluding total BTEX
3. 1 = Newfoundland and Labrador Regulation 65/03, *Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act, filed May 23, 2003.*
4. 2 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
5. Shaded result indicate an exceedance of the Schedule "A" Regulations
6. **Bolded and underlined result indicate an exceedance of the CCME FAL**
7. Dup is a Field duplicate of leachate sample SLCS

TABLE C-14 **METALS CONCENTRATIONS IN LEACHATE**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID:		Schedule "A" of the NL	CCME	PLCS	SLCS	PLCS	SLCS	DUP
Sample Date:	RDL	Regulations [1]	FAL [2]	2-Sep-11	2-Sep-11	7-Feb-12	7-Feb-12	7-Feb-12
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Parameters								
Aluminum	5	-	100	41.2	23.7	9.4	5.6	6.3
Antimony	1	-	-	<1	<1	<1	<1	<1
Arsenic	1	500	5	<1	<1	<1	<1	<1
Barium	1	5000	-	11.1	5.3	23.9	32.9	33.3
Beryllium	1	-	-	<1	<1	<1	<1	<1
Bismuth	2	-	-	<2	<2	<2	<2	<2
Boron	50	5000	1500	650	1350	1280	**1750**	**1740**
Cadmium	0.017	50	0.044-0.116	<0.017	<0.017	0.019	<0.017	<0.017
Calcium	100	-	-	46100	69700	78000	124000	123000
Chromium (VI)	0.001	50	1	1	<1	<0.0010	0.0047	0.0660
Total Chromium	1	1000	8.9	<1	**63.2**	**11.1**	<1	<1
Cobalt	0.4	-	-	<0.4	<0.4	<0.4	<0.4	<0.4
Copper	2	300	3.15-8.22	2.2	<2	2.3	<2	<2
Iron	50	10000	300	**342**	<50	269	<50	<50
Lead	0.5	200	4.88-7	<0.5	<0.5	<0.5	<0.5	<0.5
Magnesium	100	-	-	7070	16900	14300	28500	28200
Manganese	2	-	-	369	241	2620	4670	4640
Mercury	0.013	5	0.026	<0.013	<0.013	<0.013	<0.013	<0.013
Molybdenum	2	-	73	<2	<2	<2	<2	<2
Nickel	2	500	123.43-289.59	<2	<2	<2	<2	<2
Potassium	100	-	-	21000	28400	5800	8570	8680
Selenium	1	10	1	<1	<1	<1	<1	<1
Silver	0.1	50	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	100	-	-	14300	23100	15400	25700	2700
Strontium	2	-	-	104	183	161	305	301
Thallium	0.1	-	0.8	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	2	-	-	<2	<2	<2	<2	<2
Titanium	2	-	-	<2	<2	<2	<2	<2
Uranium	0.1	-	15	0.26	0.71	0.35	0.91	0.95
Vanadium	2	-	-	<2	<2	<2	<2	<2
Zinc	5	500	30	14.0	**32.2**	10.3	6.8	26.8

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed

2. 1 = Newfoundland and Labrador Regulation 65/03, Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act, filed May 23, 2003.

3. 2 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.

4. Shaded result indicate an exceedance of the Schedule "A" Regulations

5. **Bolded and underlined result indicate an exceedance of the CCME FAL**

6.DUP is a field duplicate of leachate sample SLCS

Aluminum guidelines = 5 µg/L at pH < 6.5; or 100 µg/L at pH ≥ 6.5

Cadmium guideline = 10^(0.86*(LOG(hardness))-3.2)

Copper guideline = e0.8545[ln(hardness)]-1.465 * 0.2 µg/L

Lead guideline = e1.273[ln(hardness)]-4.705 µg/L

Nickel guideline = e0.76[ln(hardness)]+1.06 µg/L

TABLE C-15 **POLYCYCLIC AROMATIC HYDROCARBONS (PAH) CONCENTRATIONS IN LEACHATE**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID: / **Sample Date:** / **Units:**	**RDL (µg/L)**	**Schedule "A" of the NL Regulations [1] (µg/L)**	**CCME FAL [2] (µg/L)**	**PLCS** 2-Sep-11 (µg/L)	**SLCS** 2-Sep-11 (µg/L)	**PLCS** 7-Feb-12 (µg/L)	**SLCS** 7-Feb-12 (µg/L)
Parameters							
1-Methylnaphthalene	0.05	-	-	<0.05	<0.05	<0.05	<0.05
2-Methylnaphthalene	0.05	-	-	<0.05	<0.05	<0.05	<0.05
Acenaphthene	0.01	-	5.8	<0.01	<0.01	0.011	<0.01
Acenaphthylene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Anthracene	0.01	-	0.012	<0.01	<0.01	<0.01	<0.01
Benzo(a)anthracene	0.01	-	0.018	<0.01	<0.01	<0.01	<0.01
Benzo(a)pyrene	0.01	-	0.015	<0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Benzo(g,h,i)perylene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Benzo(j)fluoranthene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Chrysene	0.01	-	-	<0.01	<0.01	<0.01	0.013
Dibenz(a,h)anthracene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Fluoranthene	0.01	-	0.04	<0.01	<0.01	0.011	0.018
Fluorene	0.01	-	3	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	0.01	-	-	<0.01	<0.01	0.017	<0.01
Naphthalene	0.2	-	1.1	<0.2	<0.2	<0.2	<0.2
Perylene	0.01	-	-	<0.01	<0.01	<0.01	<0.01
Phenanthrene	0.01	-	0.4	<0.01	<0.01	0.034	0.012
Pyrene	0.01	-	0.025	0.02	<0.01	**0.046**	**0.085**

Notes:
1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. 1 = Newfoundland and Labrador Regulation 65/03, Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act, filed May 23, 2003.

3. 2 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
4. Shaded result indicate an exceedance of the Schedule "A" Regulations
5. **Bolded and underlined result indicate an exceedance of the CCME FAL**.

TABLE C-16

VOLATILE ORGANIC COMPOUNDS (VOCs) CONCENTRATIONS IN LEACHATE
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID:		Schedule "A" of the NL Regulations [1]	CCME FAL [2]	PLCS	SLCS	SLCS	PLCS
Sample Date:	RDL			2-Sep-11	2-Sep-11	7-Feb-12	7-Feb-12
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Parameters							
1,2-Dichlorobenzene	0.5	-	0.7	<0.5	<0.7	<0.7	<0.7
1,3-Dichlorobenzene	1	-	150	<1	<1	<1	<1
1,4-Dichlorobenzene	1	-	26	<1	<1	<1	<1
Chlorobenzene	1	-	1.3	<1	<1	<1	<1
1,1,1-Trichloroethane	1	-	-	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	1	-	-	<1	<1	<1	<1
1,1,2-Trichloroethane	1	-	-	<1	<1	<1	<1
1,1-Dichloroethane	2	-	-	<2	<3	<3	<3
1,1-Dichloroethylene	0.5	-	-	<0.5	<0.7	<0.7	<0.7
1,2-Dichloroethane	1	-	100	<1	<1	<1	<1
1,2-Dichloropropane	1	-	-	<1	<1	<1	<1
Benzene	1	-	370	<1	<1	<1	<1
Bromodichloromethane	1	-	-	<1	<1	<1	<1
Bromoform	1	-	-	<1	<1	<1	<1
Bromomethane	3	-	-	<3	<4	<4	<4
Carbon Tetrachloride	1	-	13.3	<1	<1	<1	<1
Chloroethane	8	-	-	<8	<10	<10	<10
Chloroform	1	-	1.8	<1	<1	<1	<1
Chloromethane	8	-	-	<8	<10	<10	<10
cis-1,2-Dichloroethylene	2	-	-	<2	<3	<3	<3
cis-1,3-Dichloropropene	2	-	-	<2	<3	<3	<3
Dibromochloromethane	1	-	-	<1	<1	<1	<1
Ethylbenzene	1	-	90	<1	<1	<1	<1
Ethylene Dibromide	1	-	-	<1	<1	<1	<1
Methylene Chloride(Dichloromethane)	3	-	98.1	<3	<4	<4	<4
o-Xylene	1	-	-	<1	<1	<1	<1
p+m-Xylene	2	-	-	<2	<3	<3	<3
Styrene	1	-	72	<1	<1	<1	<1
Tetrachloroethylene	1	-	110	<1	<1	<1	<1
Toluene	1	-	2	<1	<1	<1	<1
trans-1,2-Dichloroethylene	2	-	-	<2	<3	<3	<3
trans-1,3-Dichloropropene	1	-	-	<1	<1	<1	<1
Trichloroethylene	1	-	21	<1	<1	<1	<1
Trichlorofluoromethane (FREON 11)	8	-	-	<8	<10	<10	<10
Vinyl Chloride	0.5	-	-	<0.5	<0.7	<0.7	<0.7

Notes:

1. RDL = Laboratory reportable detection limit; LD = Laboratory QA/QC Duplicate Sample; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. 1 = Newfoundland and Labrador Regulation 65/03, Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act, filed May 23, 2003.
3. 2 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
4. Shaded result indicate an exceedance of the Schedule "A" Regulations
5. **Bolded and underlined result indicate an exceedance of the CCME FAL**

TABLE C-17 **POLYCHLORINATED BIPHENYLS (PCBs) CONCENTRATIONS IN LEACHATE**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID:		**Schedule "A" of the NL**	**CCME**	**PLCS**	**SLCS**	**PLCS**	**SLCS**
Sample Date:	**RDL**	**Regulations [1]**	**FAL [2]**	2-Sep-11	2-Sep-11	7-Feb-12	7-Feb-12
Units:	**(µg/L)**	**(µg/L)**	**(µg/L)**	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Parameters							
Total PCB	0.05	-	-	<0.05	<0.05	<0.05	<0.05

Notes:
1. RDL = Laboratory reportable detection limit; n/a = not applicable; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. 1 = Newfoundland and Labrador Regulation 65/03, Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act, filed May 23, 2003.

3. 2 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
4. Shaded result indicate an exceedance of the Schedule "A" Regulations
5. **Bolded and underlined result indicate an exceedance of the CCME FAL**.

TABLE C-18 **GENERAL WATER CHEMISTRY IN LEACHATE**
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Parameter	Units	RDL	Schedule "A" of the NL Regulations [1]	CCME FAL [2]	Sample ID		Sample ID		
					PLCS	SLCS	PLCS	SLCS	DUP
				Sample Date:	2-Sep-11	2-Sep-11	7-Feb-12	7-Feb-12	7-Feb-12
Alkalinity	mg/L	30	-	-	170	270	240	410	420
Sulphate	mg/L	2	-	-	25	34	28	38	38
Chloride	mg/L	1	-	-	11	29	25	43	41
Reactive Silica	mg/L	0.5	-	-	12	19	9.7	15	15
Orthophosphate (as P)	mg/L	0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrite + Nitrate	mg/L	0.05	10	-	0.32	0.48	0.59	0.16	0.66
Nitrite	mg/L	0.01	-	0.06	<0.01	<0.01	0.01	<0.01	0.01
Nitrate	mg/L	0.05	10	13	0.32	0.48	0.58	0.16	0.65
Nitrogen (Ammonia Nitrogen)	mg/L	0.05	2.0	-	<0.05	<0.05	0.12	0.26	0.29
Colour	TCU	5	-	-	18	10	18	11	11
Turbidity	NTU	0.1	-	-	0.7	0.9	4.5	0.8	1.2
Conductivity	µS/cm	1	-	-	400	620	560	900	910
pH	n/a	n/a	5.5 - 9.0	6.5 - 9.0	7.88	7.92	7.68	7.66	7.69
Saturation pH @ 4C	n/a	n/a	-	-	7.76	7.42	7.41	7.02	7.02
Saturation pH @ 20C	n/a	n/a	-	-	7.51	7.17	7.16	6.77	6.77
Total Organic Carbon (C)	mg/L	0.5	-	-	5.1	<1	11	15	17
TDS	mg/L	1	1000	-	239	383	323	535	541
TSS	mg/L	1	30	-	5	5	5.2	4	2.8
Bicarbonate	mg/L	1	-	-	167	267	235	409	413
Carbonate	mg/L	1	-	-	1	2	1.1	1.8	1.9
Hardness (as $CaCO_3$)	mg/L	1	-	-	140	240	250	430	420
Cation Sum	me/L	n/a	-	-	4.06	6.60	5.90	9.89	9.89
Anion Sum	me/L	n/a	-	-	4.21	6.93	6.03	10.2	10.3
Ion Balance	%	n/a	-	-	1.81	2.44	1.09	1.69	2.22
Langlier Index @ 20C	n/a	n/a	-	-	0.366	0.749	0.517	0.89	0.92
Langlier Index @ 4C	n/a	n/a	-	-	0.116	0.500	0.268	0.642	0.673
Phenols-4AAP	mg/L	0.001	0.1	0.004	0.003	0.004	**0.0053**	**0.0063**	**0.0087**
Sulphide	mg/L	0.02	0.5	-	<0.02	<0.02	<0.02	<0.02	<0.02

Notes:

1. RDL = Laboratory reportable detection limit; <X: Below RDL; '-' = no guideline available or parameter not analyzed
2. 1 = Newfoundland and Labrador Regulation 65/03, Environmental Control Water and Sewage Regulations, 2003, Schedule "A", under the Water Resources Act, filed May 23, 2003.
3. 2 = Canadian Council Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (FAL), Canadian Environmental Quality Guidelines, updated 2007.
4. Shaded result indicate an exceedance of the Schedule "A" Regulations
5. **Bolded and underlined result indicate an exceedance of the CCME FAL**
6. DUP is a field duplicate of leachate sample SLCS

TABLE C-19 TOXICITY TESTING (LT_{50}) IN LEACHATE
Newfoundland and Labrador Department of Environment and Conservation
Come By Chance Secure Landfill, Come By Chance, NL
Project No. 113080.00

Sample ID	Sample Date	Effluent Concentration (%)	Temperature (°C)		D.O. (mg/L)		pH (units)		Conductivity (µs/cm)		Mortality
			Initial	Final	Initial	Final	Initial	Final	Initial	Final	(%)
PLCS	2-Sep-11	100	15.9	14.5	8.9	9.7	7.7	8.1	1675	392	0
		0	15	14.5	9.2	9.7	7.6	7.6	133	141	0
SLCS	2-Sep-11	100	15.6	14.5	8.7	9.8	7.5	8.5	625	522	0
		0	15	14.5	9.2	9.8	7.6	7.8	133	141	0
PLCS	7-Feb-12	100	14.8	14.7	9.4	9.7	7.5	8.4	600	574	0
		0	14.7	15	9.8	9.8	7.6	7.6	140	141	0
SLCS	7-Feb-12	100	15	15.5	8.7	9.9	6.9	8.3	1018	603	0
		0	14.7	15.1	9.8	9.8	7.6	7.5	150	143	0

APPENDIX E

Laboratory Certificates of Analysis

Your Project #: 115080.00
Site Location: LANDFILL
Your C.O.C. #: 06801, 06802

Attention: Kelly MacDougall
CBCL Limited
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2011/09/21

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B1D6608
Received: 2011/09/07, 9:55

Sample Matrix: Leachate
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	2	N/A	2011/09/12	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity	2	N/A	2011/09/14	ATL SOP 00013 R4	Based on EPA310.2
Chloride	2	N/A	2011/09/15	ATL SOP 00014 R6	Based on SM4500-Cl-
Colour	2	N/A	2011/09/15	ATL SOP 00020 R3.	Based on SM2120C
Hexavalent chromium in water	2	N/A	2011/09/16	ATL SOP 00056 R1	Based on SM3500-Cr-B
Conductance - water	2	N/A	2011/09/12	ATL SOP 00004 R5/00006 R4	Based on SM2510B
Hardness (calculated as CaCO3)	2	N/A	2011/09/09	ATL SOP 00048	Based on SM2340B
Mercury - Total (CVAA,LL)	2	2011/09/09	2011/09/12	ATL SOP 00026 R6	Based on EPA245.1
Metals Water Total MS	2	2011/09/08	2011/09/08	ATL SOP 00059 R1	Based on EPA6020A
Ion Balance (% Difference)	2	N/A	2011/09/15		
Anion and Cation Sum	2	N/A	2011/09/15		
Nitrogen Ammonia - water	1	N/A	2011/09/14	ATL SOP 00015 R5	Based on USEPA 350.1
Nitrogen Ammonia - water	1	N/A	2011/09/15	ATL SOP 00015 R5	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	2	N/A	2011/09/15	ATL SOP 00016 R4	Based on USGS - Enz.
Nitrogen - Nitrite	2	N/A	2011/09/15	ATL SOP 00017 R4	Based on SM4500-NO2B
Nitrogen - Nitrate (as N)	2	N/A	2011/09/15	ATL SOP 00018 R3	Based on ASTMD3867
PAH in Water by GC/MS (SIM)	2	2011/09/08	2011/09/21	ATL SOP 00103 R3	Based on EPA 8270C
PCBs in water by GC/ECD	2	2011/09/09	2011/09/14	ATL SOP 00107 R4	Based on EPA8082
Phenols (4-AAP)	2	N/A	2011/09/14	ATL SOP 00039 R5	Based on EPA 420.2
pH	2	N/A	2011/09/13	ATL SOP 00003 R5/00005 R7	Based on SM4500H+B
Phosphorus - ortho	2	N/A	2011/09/15	ATL SOP 00021 R3	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	2	N/A	2011/09/15		
Sat. pH and Langelier Index (@ 4C)	2	N/A	2011/09/15		
Reactive Silica	2	N/A	2011/09/14	ATL SOP 00022 R3	Based on EPA 366.0
Sulphate	2	N/A	2011/09/15	ATL SOP 00023 R3	Based on EPA 375.4
Sulphide (1)	2	N/A	2011/09/09	CAM SOP-00455	SM 4500-S G
Total Dissolved Solids (TDS calc)	2	N/A	2011/09/15		
Organic carbon - Total (TOC)	2	N/A	2011/09/14	ATL SOP 00037 R4	Based on SM5310C
Total Suspended Solids	2	N/A	2011/09/08	ATL SOP 00007 R3	based on EPA 160.2
Turbidity	2	N/A	2011/09/14	ATL SOP 00011 R5	based on EPA 180.1
Volatile Organic Compounds in Water	2	2011/09/08	2011/09/14	ATL SOP 00122 R4	Based on EPA624

../2

Your Project #: 115080.00
Site Location: LANDFILL
Your C.O.C. #: 06801, 06802

Attention: Kelly MacDougall
CBCL Limited
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2011/09/21

CERTIFICATE OF ANALYSIS

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2011/09/12	CAM SOP-00102	APHA 4500-CO2 D
Carbonate, Bicarbonate and Hydroxide	8	N/A	2011/09/13	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity	9	N/A	2011/09/14	ATL SOP 00013 R4	Based on EPA310.2
Chloride	9	N/A	2011/09/15	ATL SOP 00014 R6	Based on SM4500-Cl-
Colour	9	N/A	2011/09/15	ATL SOP 00020 R3.	Based on SM2120C
Conductance - water	1	N/A	2011/09/12	ATL SOP 00004 R5/00006 R4	Based on SM2510B
Conductance - water	8	N/A	2011/09/13	ATL SOP 00004 R5/00006 R4	Based on SM2510B
Hardness (calculated as CaCO3)	9	N/A	2011/09/09	ATL SOP 00048	Based on SM2340B
Mercury - Total (CVAA,LL)	5	2011/09/09	2011/09/12	ATL SOP 00026 R6	Based on EPA245.1
Mercury - Total (CVAA,LL)	4	2011/09/13	2011/09/14	ATL SOP 00026 R6	Based on EPA245.1
Metals Water Diss. MS	7	N/A	2011/09/08	ATL SOP 00059 R1	Based on EPA6020A
Metals Water Total MS	2	2011/09/08	2011/09/08	ATL SOP 00059 R1	Based on EPA6020A
Ion Balance (% Difference)	9	N/A	2011/09/15		
Anion and Cation Sum	9	N/A	2011/09/15		
Nitrogen Ammonia - water	9	N/A	2011/09/15	ATL SOP 00015 R5	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	9	N/A	2011/09/15	ATL SOP 00016 R4	Based on USGS - Enz.
Nitrogen - Nitrite	9	N/A	2011/09/15	ATL SOP 00017 R4	Based on SM4500-NO2B
Nitrogen - Nitrate (as N)	9	N/A	2011/09/15	ATL SOP 00018 R3	Based on ASTMD3867
PAH in Water by GC/MS (SIM)	9	2011/09/08	2011/09/21	ATL SOP 00103 R3	Based on EPA 8270C
PCBs in water by GC/ECD	3	2011/09/09	2011/09/14	ATL SOP 00107 R4	Based on EPA8082
PCBs in water by GC/ECD	6	2011/09/09	2011/09/16	ATL SOP 00107 R4	Based on EPA8082
pH	9	N/A	2011/09/13	ATL SOP 00003 R5/00005 R7	Based on SM4500H+B
Phosphorus - ortho	9	N/A	2011/09/15	ATL SOP 00021 R3	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	9	N/A	2011/09/15		
Sat. pH and Langelier Index (@ 4C)	9	N/A	2011/09/15		
Reactive Silica	9	N/A	2011/09/14	ATL SOP 00022 R3	Based on EPA 366.0
Sulphate	9	N/A	2011/09/15	ATL SOP 00023 R3	Based on EPA 375.4
Total Dissolved Solids (TDS calc)	9	N/A	2011/09/15		
Organic carbon - Total (TOC)	9	N/A	2011/09/14	ATL SOP 00037 R4	Based on SM5310C
Total Suspended Solids	9	N/A	2011/09/08	ATL SOP 00007 R3	based on EPA 160.2
Turbidity	9	N/A	2011/09/14	ATL SOP 00011 R5	based on EPA 180.1
Volatile Organic Compounds in Water	1	2011/09/08	2011/09/14	ATL SOP 00122 R4	Based on EPA624
Volatile Organic Compounds in Water	8	2011/09/08	2011/09/15	ATL SOP 00122 R4	Based on EPA624

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

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(1) This test was performed by Maxxam Analytics Mississauga

Encryption Key

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

KERI MACKAY, Project Manager - Bedford
Email: kmackay@maxxam.ca
Phone# (902) 420-0203 Ext:233

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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.

Total cover pages: 2

Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		KU3818	KU3818			KU3841	KU3841		
Sampling Date		2011/09/02	2011/09/02			2011/09/02	2011/09/02		
COC Number		06801	06801			06801	06801		
	Units	**MW93-1**	**MW93-1 Lab-Dup**	**RDL**	**QC Batch**	**MW93-1A**	**MW93-1A Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	me/L	7.47		N/A	2605954	5.61		N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	304		1	2605950	216		1	2605950
Calculated TDS	mg/L	389		1	2605960	302		1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	4		1	2605950	3		1	2605950
Cation Sum	me/L	6.90		N/A	2605954	5.35		N/A	2605954
Hardness (CaCO3)	mg/L	180		1	2605952	120		1	2605952
Ion Balance (% Difference)	%	3.97		N/A	2605953	2.37		N/A	2605953
Langelier Index (@ 20C)	N/A	0.798			2605958	0.554			2605958
Langelier Index (@ 4C)	N/A	0.550			2605959	0.305			2605959
Nitrate (N)	mg/L	ND		0.05	2605955	ND		0.05	2605955
Saturation pH (@ 20C)	N/A	7.32			2605958	7.67			2605958
Saturation pH (@ 4C)	N/A	7.57			2605959	7.92			2605959
Inorganics									
Total Alkalinity (Total as CaCO3)	mg/L	310		30	2613145	220		30	2613145
Dissolved Chloride (Cl)	mg/L	11		1	2613147	16		1	2613147
Colour	TCU	ND		5	2613151	ND		5	2613151
Nitrate + Nitrite	mg/L	ND		0.05	2613154	ND		0.05	2613154
Nitrite (N)	mg/L	ND		0.01	2613155	ND		0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND		0.05	2613419	ND		0.05	2613419
Total Organic Carbon (C)	mg/L	930		50	2614171	ND		0.5	2614171
Orthophosphate (P)	mg/L	ND		0.01	2613153	ND		0.01	2613153
pH	pH	8.12		N/A	2611762	8.22		N/A	2611762
Reactive Silica (SiO2)	mg/L	6.9		0.5	2613150	7.7		0.5	2613150
Dissolved Sulphate (SO4)	mg/L	48		10	2613149	38		2	2613149
Turbidity	NTU	>1000	>1000	10	2613427	1.1		0.1	2613430
Conductivity	uS/cm	630		1	2611764	500		1	2611764
Metals									
Dissolved Aluminum (Al)	ug/L	73.7		5.0	2607495	5.9	5.7	5.0	2607495
Dissolved Antimony (Sb)	ug/L	ND		1.0	2607495	ND	ND	1.0	2607495
Dissolved Arsenic (As)	ug/L	ND		1.0	2607495	ND	ND	1.0	2607495

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		KU3818	KU3818			KU3841	KU3841		
Sampling Date		2011/09/02	2011/09/02			2011/09/02	2011/09/02		
COC Number		06801	06801			06801	06801		
	Units	**MW93-1**	**MW93-1 Lab-Dup**	**RDL**	**QC Batch**	**MW93-1A**	**MW93-1A Lab-Dup**	**RDL**	**QC Batch**
Dissolved Barium (Ba)	ug/L	77.9		1.0	2607495	68.6	67.6	1.0	2607495
Dissolved Beryllium (Be)	ug/L	ND		1.0	2607495	ND	ND	1.0	2607495
Dissolved Bismuth (Bi)	ug/L	ND		2.0	2607495	ND	ND	2.0	2607495
Dissolved Boron (B)	ug/L	63		50	2607495	96	97	50	2607495
Dissolved Cadmium (Cd)	ug/L	ND		0.017	2607495	ND	ND	0.017	2607495
Dissolved Calcium (Ca)	ug/L	43500		100	2607495	26300	25600	100	2607495
Dissolved Chromium (Cr)	ug/L	ND		1.0	2607495	ND	ND	1.0	2607495
Dissolved Cobalt (Co)	ug/L	0.44		0.40	2607495	ND	ND	0.40	2607495
Dissolved Copper (Cu)	ug/L	ND		2.0	2607495	ND	ND	2.0	2607495
Dissolved Iron (Fe)	ug/L	65		50	2607495	ND	ND	50	2607495
Dissolved Lead (Pb)	ug/L	ND		0.50	2607495	ND	ND	0.50	2607495
Dissolved Magnesium (Mg)	ug/L	16400		100	2607495	12200	12100	100	2607495
Dissolved Manganese (Mn)	ug/L	60.0		2.0	2607495	259	258	2.0	2607495
Dissolved Molybdenum (Mo)	ug/L	16.3		2.0	2607495	19.2	18.8	2.0	2607495
Dissolved Nickel (Ni)	ug/L	ND		2.0	2607495	ND	ND	2.0	2607495
Dissolved Potassium (K)	ug/L	2680		100	2607495	1830	1840	100	2607495
Dissolved Selenium (Se)	ug/L	ND		1.0	2607495	ND	ND	1.0	2607495
Dissolved Silver (Ag)	ug/L	ND		0.10	2607495	ND	ND	0.10	2607495
Dissolved Sodium (Na)	ug/L	76100		100	2607495	68600	68400	100	2607495
Dissolved Strontium (Sr)	ug/L	263		2.0	2607495	192	190	2.0	2607495
Dissolved Thallium (Tl)	ug/L	ND		0.10	2607495	ND	ND	0.10	2607495
Dissolved Tin (Sn)	ug/L	ND		2.0	2607495	ND	ND	2.0	2607495
Dissolved Titanium (Ti)	ug/L	2.6		2.0	2607495	ND	ND	2.0	2607495
Dissolved Uranium (U)	ug/L	3.06		0.10	2607495	0.40	0.42	0.10	2607495
Dissolved Vanadium (V)	ug/L	ND		2.0	2607495	ND	ND	2.0	2607495
Dissolved Zinc (Zn)	ug/L	ND		5.0	2607495	ND	ND	5.0	2607495

ND = Not detected
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QC Batch = Quality Control Batch

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Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		KU3842		KU3843		KU3844		KU3845		
Sampling Date		2011/09/02		2011/09/02		2011/09/02		2011/09/02		
COC Number		06801		06801		06801		06801		
	Units	**MW93-2**	**RDL**	**MW93-2A**	**RDL**	**MW10-1**	**RDL**	**MW10-1A**	**RDL**	**QC Batch**
Calculated Parameters										
Anion Sum	me/L	6.42	N/A	2.42	N/A	3.48	N/A	1.57	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	210	1	61	1	144	1	50	1	2605950
Calculated TDS	mg/L	361	1	145	1	185	1	95	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	2	1	ND	1	ND	1	ND	1	2605950
Cation Sum	me/L	6.10	N/A	2.09	N/A	3.27	N/A	1.43	N/A	2605954
Hardness (CaCO3)	mg/L	260	1	73	1	150	1	61	1	2605952
Ion Balance (% Difference)	%	2.56	N/A	7.32	N/A	3.11	N/A	4.67	N/A	2605953
Langelier Index (@ 20C)	N/A	0.675		-1.21		0.336		-1.18		2605958
Langelier Index (@ 4C)	N/A	0.426		-1.46		0.0860		-1.43		2605959
Nitrate (N)	mg/L	ND	0.05	ND	0.05	0.09	0.05	0.11	0.05	2605955
Saturation pH (@ 20C)	N/A	7.23		8.27		7.51		8.32		2605958
Saturation pH (@ 4C)	N/A	7.47		8.52		7.76		8.57		2605959
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	210	30	61	5	140	30	51	5	2613145
Dissolved Chloride (Cl)	mg/L	20	1	16	1	6	1	3	1	2613147
Colour	TCU	ND	5	120	30	9	5	22	5	2613151
Nitrate + Nitrite	mg/L	ND	0.05	ND	0.05	0.09	0.05	0.11	0.05	2613154
Nitrite (N)	mg/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	0.25	0.05	0.28	0.05	ND	0.05	2613419
Total Organic Carbon (C)	mg/L	1.0	0.5	17	5	18	5	15	0.5	2614171
Orthophosphate (P)	mg/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01	2613153
pH	pH	7.90	N/A	7.06	N/A	7.85	N/A	7.14	N/A	2611762
Reactive Silica (SiO2)	mg/L	19	0.5	11	0.5	8.0	0.5	10	0.5	2613150
Dissolved Sulphate (SO4)	mg/L	78	10	36	2	20	2	22	2	2613149
Turbidity	NTU	3.9	0.1	190	1	320	1	>1000	10	2613430
Conductivity	uS/cm	570	1	230	1	320	1	150	1	2611764
Metals										
Dissolved Aluminum (Al)	ug/L	ND	5.0	86.6	5.0	41.8	5.0	74.5	5.0	2607495
Dissolved Antimony (Sb)	ug/L	ND	1.0	ND	1.0	ND	1.0	ND	1.0	2607495
Dissolved Arsenic (As)	ug/L	1.2	1.0	ND	1.0	ND	1.0	ND	1.0	2607495
Dissolved Barium (Ba)	ug/L	171	1.0	54.1	1.0	50.2	1.0	28.8	1.0	2607495

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

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Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		KU3842		KU3843		KU3844		KU3845		
Sampling Date		2011/09/02		2011/09/02		2011/09/02		2011/09/02		
COC Number		06801		06801		06801		06801		
	Units	**MW93-2**	**RDL**	**MW93-2A**	**RDL**	**MW10-1**	**RDL**	**MW10-1A**	**RDL**	**QC Batch**
Dissolved Beryllium (Be)	ug/L	ND	1.0	ND	1.0	ND	1.0	ND	1.0	2607495
Dissolved Bismuth (Bi)	ug/L	ND	2.0	ND	2.0	ND	2.0	ND	2.0	2607495
Dissolved Boron (B)	ug/L	1160	50	317	50	ND	50	ND	50	2607495
Dissolved Cadmium (Cd)	ug/L	0.038	0.017	0.304	0.017	0.032	0.017	0.039	0.017	2607495
Dissolved Calcium (Ca)	ug/L	77300	100	20600	100	51100	100	20600	100	2607495
Dissolved Chromium (Cr)	ug/L	ND	1.0	ND	1.0	ND	1.0	ND	1.0	2607495
Dissolved Cobalt (Co)	ug/L	0.56	0.40	1.19	0.40	4.91	0.40	1.54	0.40	2607495
Dissolved Copper (Cu)	ug/L	ND	2.0	ND	2.0	7.3	2.0	9.4	2.0	2607495
Dissolved Iron (Fe)	ug/L	ND	50	3000	50	50	50	96	50	2607495
Dissolved Lead (Pb)	ug/L	ND	0.50	1.17	0.50	ND	0.50	ND	0.50	2607495
Dissolved Magnesium (Mg)	ug/L	15600	100	5220	100	4540	100	2190	100	2607495
Dissolved Manganese (Mn)	ug/L	1120	2.0	4190	2.0	239	2.0	106	2.0	2607495
Dissolved Molybdenum (Mo)	ug/L	ND	2.0	ND	2.0	2.5	2.0	8.5	2.0	2607495
Dissolved Nickel (Ni)	ug/L	ND	2.0	ND	2.0	6.5	2.0	8.9	2.0	2607495
Dissolved Potassium (K)	ug/L	1560	100	1040	100	1360	100	714	100	2607495
Dissolved Selenium (Se)	ug/L	ND	1.0	ND	1.0	ND	1.0	ND	1.0	2607495
Dissolved Silver (Ag)	ug/L	ND	0.10	ND	0.10	ND	0.10	ND	0.10	2607495
Dissolved Sodium (Na)	ug/L	21000	100	11000	100	6570	100	4670	100	2607495
Dissolved Strontium (Sr)	ug/L	210	2.0	70.6	2.0	106	2.0	46.9	2.0	2607495
Dissolved Thallium (Tl)	ug/L	ND	0.10	ND	0.10	ND	0.10	ND	0.10	2607495
Dissolved Tin (Sn)	ug/L	ND	2.0	ND	2.0	ND	2.0	ND	2.0	2607495
Dissolved Titanium (Ti)	ug/L	ND	2.0	ND	2.0	ND	2.0	2.1	2.0	2607495
Dissolved Uranium (U)	ug/L	0.24	0.10	ND	0.10	0.43	0.10	ND	0.10	2607495
Dissolved Vanadium (V)	ug/L	ND	2.0	ND	2.0	ND	2.0	ND	2.0	2607495
Dissolved Zinc (Zn)	ug/L	5.0	5.0	568	5.0	9.0	5.0	8.9	5.0	2607495

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

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Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		KU3846		
Sampling Date		2011/09/02		
COC Number		06802		
	Units	**DUP-A**	**RDL**	**QC Batch**
Calculated Parameters				
Anion Sum	me/L	1.59	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	51	1	2605950
Calculated TDS	mg/L	95	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1	2605950
Cation Sum	me/L	1.44	N/A	2605954
Hardness (CaCO3)	mg/L	61	1	2605952
Ion Balance (% Difference)	%	4.95	N/A	2605953
Langelier Index (@ 20C)	N/A	-1.11		2605958
Langelier Index (@ 4C)	N/A	-1.36		2605959
Nitrate (N)	mg/L	0.08	0.05	2605955
Saturation pH (@ 20C)	N/A	8.31		2605958
Saturation pH (@ 4C)	N/A	8.56		2605959
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L	51	5	2613145
Dissolved Chloride (Cl)	mg/L	3	1	2613147
Colour	TCU	18	5	2613151
Nitrate + Nitrite	mg/L	0.08	0.05	2613154
Nitrite (N)	mg/L	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	2613419
Total Organic Carbon (C)	mg/L	18	0.5	2614171
Orthophosphate (P)	mg/L	ND	0.01	2613153
pH	pH	7.20	N/A	2611762
Reactive Silica (SiO2)	mg/L	10	0.5	2613150
Dissolved Sulphate (SO4)	mg/L	22	2	2613149
Turbidity	NTU	>1000	10	2613430
Conductivity	uS/cm	150	1	2611764
Metals				
Dissolved Aluminum (Al)	ug/L	68.3	5.0	2607495
Dissolved Antimony (Sb)	ug/L	ND	1.0	2607495
Dissolved Arsenic (As)	ug/L	ND	1.0	2607495
Dissolved Barium (Ba)	ug/L	29.4	1.0	2607495

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CBCL Limited
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Site Location: LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		KU3846		
Sampling Date		2011/09/02		
COC Number		06802		
	Units	**DUP-A**	**RDL**	**QC Batch**
Dissolved Beryllium (Be)	ug/L	ND	1.0	2607495
Dissolved Bismuth (Bi)	ug/L	ND	2.0	2607495
Dissolved Boron (B)	ug/L	ND	50	2607495
Dissolved Cadmium (Cd)	ug/L	0.036	0.017	2607495
Dissolved Calcium (Ca)	ug/L	20800	100	2607495
Dissolved Chromium (Cr)	ug/L	ND	1.0	2607495
Dissolved Cobalt (Co)	ug/L	2.07	0.40	2607495
Dissolved Copper (Cu)	ug/L	9.1	2.0	2607495
Dissolved Iron (Fe)	ug/L	92	50	2607495
Dissolved Lead (Pb)	ug/L	2.66	0.50	2607495
Dissolved Magnesium (Mg)	ug/L	2150	100	2607495
Dissolved Manganese (Mn)	ug/L	139	2.0	2607495
Dissolved Molybdenum (Mo)	ug/L	6.1	2.0	2607495
Dissolved Nickel (Ni)	ug/L	8.3	2.0	2607495
Dissolved Potassium (K)	ug/L	693	100	2607495
Dissolved Selenium (Se)	ug/L	ND	1.0	2607495
Dissolved Silver (Ag)	ug/L	ND	0.10	2607495
Dissolved Sodium (Na)	ug/L	4600	100	2607495
Dissolved Strontium (Sr)	ug/L	45.4	2.0	2607495
Dissolved Thallium (Tl)	ug/L	ND	0.10	2607495
Dissolved Tin (Sn)	ug/L	ND	2.0	2607495
Dissolved Titanium (Ti)	ug/L	ND	2.0	2607495
Dissolved Uranium (U)	ug/L	ND	0.10	2607495
Dissolved Vanadium (V)	ug/L	ND	2.0	2607495
Dissolved Zinc (Zn)	ug/L	10.1	5.0	2607495

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Site Location: LANDFILL

ATLANTIC RCAP-MS TOTAL METALS IN WATER (LEACHATE)

Maxxam ID		KU3629		KU3797		
Sampling Date		2011/09/02		2011/09/02		
COC Number		06801		06801		
	Units	**PLCS**	**RDL**	**SLCS**	**RDL**	**QC Batch**
Calculated Parameters						
Anion Sum	me/L	4.21	N/A	6.93	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	167	1	267	1	2605950
Calculated TDS	mg/L	239	1	383	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	1	2	1	2605950
Cation Sum	me/L	4.06	N/A	6.60	N/A	2605954
Hardness (CaCO3)	mg/L	140	1	240	1	2605952
Ion Balance (% Difference)	%	1.81	N/A	2.44	N/A	2605953
Langelier Index (@ 20C)	N/A	0.366		0.749		2605958
Langelier Index (@ 4C)	N/A	0.116		0.500		2605959
Nitrate (N)	mg/L	0.32	0.05	0.48	0.05	2605955
Saturation pH (@ 20C)	N/A	7.51		7.17		2605958
Saturation pH (@ 4C)	N/A	7.76		7.42		2605959
Inorganics						
Total Alkalinity (Total as CaCO3)	mg/L	170	30	270	30	2613145
Dissolved Chloride (Cl)	mg/L	11	1	29	1	2613147
Colour	TCU	18	5	10	5	2613151
Nitrate + Nitrite	mg/L	0.32	0.05	0.48	0.05	2613154
Nitrite (N)	mg/L	ND	0.01	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	ND	0.05	2613410
Total Organic Carbon (C)	mg/L	5.1	0.5	ND	1	2614171
Orthophosphate (P)	mg/L	ND	0.01	ND	0.01	2613153
pH	pH	7.88	N/A	7.92	N/A	2610932
Reactive Silica (SiO2)	mg/L	12	0.5	19	0.5	2613150
Dissolved Sulphate (SO4)	mg/L	25	2	34	2	2613149
Turbidity	NTU	0.7	0.1	0.9	0.1	2613427
Conductivity	uS/cm	400	1	620	1	2610933
Metals						
Total Aluminum (Al)	ug/L	41.2	5.0	23.7	5.0	2607299
Total Antimony (Sb)	ug/L	ND	1.0	ND	1.0	2607299
Total Arsenic (As)	ug/L	ND	1.0	ND	1.0	2607299
Total Barium (Ba)	ug/L	11.1	1.0	5.3	1.0	2607299

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CBCL Limited
Client Project #: 115080.00
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ATLANTIC RCAP-MS TOTAL METALS IN WATER (LEACHATE)

Maxxam ID		KU3629		KU3797		
Sampling Date		2011/09/02		2011/09/02		
COC Number		06801		06801		
	Units	**PLCS**	**RDL**	**SLCS**	**RDL**	**QC Batch**
Total Beryllium (Be)	ug/L	ND	1.0	ND	1.0	2607299
Total Bismuth (Bi)	ug/L	ND	2.0	ND	2.0	2607299
Total Boron (B)	ug/L	650	50	1350	50	2607299
Total Cadmium (Cd)	ug/L	ND	0.017	ND	0.017	2607299
Total Calcium (Ca)	ug/L	46100	100	69700	100	2607299
Total Chromium (Cr)	ug/L	ND	1.0	63.2	1.0	2607299
Total Cobalt (Co)	ug/L	ND	0.40	ND	0.40	2607299
Total Copper (Cu)	ug/L	2.2	2.0	ND	2.0	2607299
Total Iron (Fe)	ug/L	342	50	ND	50	2607299
Total Lead (Pb)	ug/L	ND	0.50	ND	0.50	2607299
Total Magnesium (Mg)	ug/L	7070	100	16900	100	2607299
Total Manganese (Mn)	ug/L	369	2.0	241	2.0	2607299
Total Molybdenum (Mo)	ug/L	ND	2.0	ND	2.0	2607299
Total Nickel (Ni)	ug/L	ND	2.0	ND	2.0	2607299
Total Potassium (K)	ug/L	21000	100	28400	100	2607299
Total Selenium (Se)	ug/L	ND	1.0	ND	1.0	2607299
Total Silver (Ag)	ug/L	ND	0.10	ND	0.10	2607299
Total Sodium (Na)	ug/L	14300	100	23100	100	2607299
Total Strontium (Sr)	ug/L	104	2.0	183	2.0	2607299
Total Thallium (Tl)	ug/L	ND	0.10	ND	0.10	2607299
Total Tin (Sn)	ug/L	ND	2.0	ND	2.0	2607299
Total Titanium (Ti)	ug/L	ND	2.0	ND	2.0	2607299
Total Uranium (U)	ug/L	0.26	0.10	0.71	0.10	2607299
Total Vanadium (V)	ug/L	ND	2.0	ND	2.0	2607299
Total Zinc (Zn)	ug/L	14.0	5.0	32.2	5.0	2607299

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QC Batch = Quality Control Batch

Maxxam Job #: B1D6608
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CBCL Limited
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Site Location: LANDFILL

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		KU3798	KU3798			KU3816		
Sampling Date		2011/09/02	2011/09/02			2011/09/02		
COC Number		06801	06801			06801		
	Units	**SURFACE -UP**	**SURFACE -UP Lab-Dup**	**RDL**	**QC Batch**	**SURFACE -DOWN**	**RDL**	**QC Batch**
Calculated Parameters								
Anion Sum	me/L	0.680		N/A	2605954	3.80	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	17		1	2605950	159	1	2605950
Calculated TDS	mg/L	63		1	2605960	204	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND		1	2605950	ND	1	2605950
Cation Sum	me/L	1.45		N/A	2605954	3.85	N/A	2605954
Hardness (CaCO3)	mg/L	29		1	2605952	170	1	2605952
Ion Balance (% Difference)	%	36.2		N/A	2605953	0.650	N/A	2605953
Langelier Index (@ 20C)	N/A	-3.19			2605958	0.248		2605958
Langelier Index (@ 4C)	N/A	-3.44			2605959	-0.00200		2605959
Nitrate (N)	mg/L	ND		0.05	2605955	1.6	0.05	2605955
Saturation pH (@ 20C)	N/A	9.18			2605958	7.39		2605958
Saturation pH (@ 4C)	N/A	9.43			2605959	7.64		2605959
Inorganics								
Total Alkalinity (Total as CaCO3)	mg/L	17		5	2613145	160	30	2613145
Dissolved Chloride (Cl)	mg/L	7		1	2613147	8	1	2613147
Colour	TCU	140		30	2613151	32	5	2613151
Nitrate + Nitrite	mg/L	ND		0.05	2613154	1.6	0.05	2613154
Nitrite (N)	mg/L	ND		0.01	2613155	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND		0.05	2613410	ND	0.05	2613410
Total Organic Carbon (C)	mg/L	41		5	2614171	2.8	0.5	2614171
Orthophosphate (P)	mg/L	ND		0.01	2613153	ND	0.01	2613153
pH	pH	5.99	5.99	N/A	2610932	7.64	N/A	2611762
Reactive Silica (SiO2)	mg/L	3.5		0.5	2613150	1.8	0.5	2613150
Dissolved Sulphate (SO4)	mg/L	7		2	2613149	12	2	2613149
Turbidity	NTU	30		0.1	2613427	5.6	0.1	2613427
Conductivity	uS/cm	72	71	1	2610933	340	1	2611764
Metals								
Total Aluminum (Al)	ug/L	1140		5.0	2607299	941	5.0	2607299
Total Antimony (Sb)	ug/L	ND		1.0	2607299	ND	1.0	2607299
Total Arsenic (As)	ug/L	2.5		1.0	2607299	2.5	1.0	2607299

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CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		KU3798	KU3798			KU3816		
Sampling Date		2011/09/02	2011/09/02			2011/09/02		
COC Number		06801	06801			06801		
	Units	**SURFACE -UP**	**SURFACE -UP Lab-Dup**	**RDL**	**QC Batch**	**SURFACE -DOWN**	**RDL**	**QC Batch**
Total Barium (Ba)	ug/L	132		1.0	2607299	179	1.0	2607299
Total Beryllium (Be)	ug/L	ND		1.0	2607299	ND	1.0	2607299
Total Bismuth (Bi)	ug/L	ND		2.0	2607299	ND	2.0	2607299
Total Boron (B)	ug/L	ND		50	2607299	ND	50	2607299
Total Cadmium (Cd)	ug/L	0.066		0.017	2607299	0.035	0.017	2607299
Total Calcium (Ca)	ug/L	8230		100	2607299	62300	100	2607299
Total Chromium (Cr)	ug/L	2.3		1.0	2607299	163	1.0	2607299
Total Cobalt (Co)	ug/L	1.90		0.40	2607299	1.98	0.40	2607299
Total Copper (Cu)	ug/L	5.3		2.0	2607299	3.0	2.0	2607299
Total Iron (Fe)	ug/L	16700		50	2607299	4130	50	2607299
Total Lead (Pb)	ug/L	2.16		0.50	2607299	0.69	0.50	2607299
Total Magnesium (Mg)	ug/L	1960		100	2607299	3830	100	2607299
Total Manganese (Mn)	ug/L	1460		2.0	2607299	1760	2.0	2607299
Total Molybdenum (Mo)	ug/L	ND		2.0	2607299	ND	2.0	2607299
Total Nickel (Ni)	ug/L	4.8		2.0	2607299	ND	2.0	2607299
Total Potassium (K)	ug/L	2620		100	2607299	1030	100	2607299
Total Selenium (Se)	ug/L	ND		1.0	2607299	ND	1.0	2607299
Total Silver (Ag)	ug/L	ND		0.10	2607299	ND	0.10	2607299
Total Sodium (Na)	ug/L	4980		100	2607299	5820	100	2607299
Total Strontium (Sr)	ug/L	35.5		2.0	2607299	110	2.0	2607299
Total Thallium (Tl)	ug/L	ND		0.10	2607299	ND	0.10	2607299
Total Tin (Sn)	ug/L	ND		2.0	2607299	ND	2.0	2607299
Total Titanium (Ti)	ug/L	35.2		2.0	2607299	37.2	2.0	2607299
Total Uranium (U)	ug/L	ND		0.10	2607299	0.35	0.10	2607299
Total Vanadium (V)	ug/L	19.9		2.0	2607299	2.8	2.0	2607299
Total Zinc (Zn)	ug/L	28.1		5.0	2607299	12.4	5.0	2607299

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CBCL Limited
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ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Maxxam ID		KU3816		
Sampling Date		2011/09/02		
COC Number		06801		
	Units	**SURFACE -DOWN Lab-Dup**	**RDL**	**QC Batch**
Inorganics				
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	2613410

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ATLANTIC VOC IN WATER (LEACHATE)

Maxxam ID		KU3629		KU3629	KU3797		
Sampling Date		2011/09/02		2011/09/02	2011/09/02		
COC Number		06801		06801	06801		
	Units	**PLCS**	**RDL**	**PLCS Lab-Dup**	**SLCS**	**RDL**	**QC Batch**
Chlorobenzenes							
1,2-Dichlorobenzene	ug/L	ND	0.5	ND	ND	0.7	2607609
1,3-Dichlorobenzene	ug/L	ND	1	ND	ND	1	2607609
1,4-Dichlorobenzene	ug/L	ND	1	ND	ND	1	2607609
Chlorobenzene	ug/L	ND	1	ND	ND	1	2607609
Volatile Organics							
1,1,1-Trichloroethane	ug/L	ND	1	ND	ND	1	2607609
1,1,2,2-Tetrachloroethane	ug/L	ND	1	ND	ND	1	2607609
1,1,2-Trichloroethane	ug/L	ND	1	ND	ND	1	2607609
1,1-Dichloroethane	ug/L	ND	2	ND	ND	3	2607609
1,1-Dichloroethylene	ug/L	ND	0.5	ND	ND	0.7	2607609
1,2-Dichloroethane	ug/L	ND	1	ND	ND	1	2607609
1,2-Dichloropropane	ug/L	ND	1	ND	ND	1	2607609
Benzene	ug/L	ND	1	ND	ND	1	2607609
Bromodichloromethane	ug/L	ND	1	ND	ND	1	2607609
Bromoform	ug/L	ND	1	ND	ND	1	2607609
Bromomethane	ug/L	ND	3	ND	ND	4	2607609
Carbon Tetrachloride	ug/L	ND	1	ND	ND	1	2607609
Chloroethane	ug/L	ND	8	ND	ND	10	2607609
Chloroform	ug/L	ND	1	ND	ND	1	2607609
Chloromethane	ug/L	ND	8	ND	ND	10	2607609
cis-1,2-Dichloroethylene	ug/L	ND	2	ND	ND	3	2607609
cis-1,3-Dichloropropene	ug/L	ND	2	ND	ND	3	2607609
Dibromochloromethane	ug/L	ND	1	ND	ND	1	2607609
Ethylbenzene	ug/L	ND	1	ND	ND	1	2607609
Ethylene Dibromide	ug/L	ND	1	ND	ND	1	2607609
Methylene Chloride(Dichloromethane)	ug/L	ND	3	ND	ND	4	2607609
o-Xylene	ug/L	ND	1	ND	ND	1	2607609
p+m-Xylene	ug/L	ND	2	ND	ND	3	2607609
Styrene	ug/L	ND	1	ND	ND	1	2607609
Tetrachloroethylene	ug/L	ND	1	ND	ND	1	2607609

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ATLANTIC VOC IN WATER (LEACHATE)

Maxxam ID		KU3629		KU3629	KU3797		
Sampling Date		2011/09/02		2011/09/02	2011/09/02		
COC Number		06801		06801	06801		
	Units	**PLCS**	**RDL**	**PLCS Lab-Dup**	**SLCS**	**RDL**	**QC Batch**
Toluene	ug/L	ND	1	ND	ND	1	2607609
trans-1,2-Dichloroethylene	ug/L	ND	2	ND	ND	3	2607609
trans-1,3-Dichloropropene	ug/L	ND	1	ND	ND	1	2607609
Trichloroethylene	ug/L	ND	1	ND	ND	1	2607609
Trichlorofluoromethane (FREON 11)	ug/L	ND	8	ND	ND	10	2607609
Vinyl Chloride	ug/L	ND	0.5	ND	ND	0.7	2607609
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	99		98 (1)	99 (2)		2607609
D4-1,2-Dichloroethane	%	100		102	101		2607609
D8-Toluene	%	99		99	100		2607609

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC analysis performed on previously opened vial.
(2) VOC analysis performed on previously opened vial. Analytical data not bracketed by acceptable QC due to instrument malfunction. Insufficient sample to repeat.

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Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		KU3798		KU3816	KU3818	KU3841		
Sampling Date		2011/09/02		2011/09/02	2011/09/02	2011/09/02		
COC Number		06801		06801	06801	06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**RDL**	**QC Batch**
Chlorobenzenes								
1,2-Dichlorobenzene	ug/L	ND	0.5	ND	ND	ND	0.7	2607609
1,3-Dichlorobenzene	ug/L	ND	1	ND	ND	ND	1	2607609
1,4-Dichlorobenzene	ug/L	ND	1	ND	ND	ND	1	2607609
Chlorobenzene	ug/L	ND	1	ND	ND	ND	1	2607609
Volatile Organics								
1,1,1-Trichloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,1,2,2-Tetrachloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,1,2-Trichloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,1-Dichloroethane	ug/L	ND	2	ND	ND	ND	3	2607609
1,1-Dichloroethylene	ug/L	ND	0.5	ND	ND	ND	0.7	2607609
1,2-Dichloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,2-Dichloropropane	ug/L	ND	1	ND	ND	ND	1	2607609
Benzene	ug/L	ND	1	ND	ND	ND	1	2607609
Bromodichloromethane	ug/L	ND	1	ND	ND	ND	1	2607609
Bromoform	ug/L	ND	1	ND	ND	ND	1	2607609
Bromomethane	ug/L	ND	3	ND	ND	ND	4	2607609
Carbon Tetrachloride	ug/L	ND	1	ND	ND	ND	1	2607609
Chloroethane	ug/L	ND	8	ND	ND	ND	10	2607609
Chloroform	ug/L	ND	1	ND	ND	ND	1	2607609
Chloromethane	ug/L	ND	8	ND	ND	ND	10	2607609
cis-1,2-Dichloroethylene	ug/L	ND	2	ND	ND	ND	3	2607609
cis-1,3-Dichloropropene	ug/L	ND	2	ND	ND	ND	3	2607609
Dibromochloromethane	ug/L	ND	1	ND	ND	ND	1	2607609
Ethylbenzene	ug/L	ND	1	ND	ND	ND	1	2607609
Ethylene Dibromide	ug/L	ND	1	ND	ND	ND	1	2607609
Methylene Chloride(Dichloromethane)	ug/L	ND	3	ND	ND	ND	4	2607609
o-Xylene	ug/L	ND	1	ND	ND	ND	1	2607609
p+m-Xylene	ug/L	ND	2	ND	ND	ND	3	2607609
Styrene	ug/L	ND	1	ND	ND	ND	1	2607609
Tetrachloroethylene	ug/L	ND	1	ND	ND	ND	1	2607609

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

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ATLANTIC VOC IN WATER (WATER)

Maxxam ID		KU3798		KU3816	KU3818	KU3841		
Sampling Date		2011/09/02		2011/09/02	2011/09/02	2011/09/02		
COC Number		06801		06801	06801	06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**RDL**	**QC Batch**
Toluene	ug/L	2	1	ND	ND	ND	1	2607609
trans-1,2-Dichloroethylene	ug/L	ND	2	ND	ND	ND	3	2607609
trans-1,3-Dichloropropene	ug/L	ND	1	ND	ND	ND	1	2607609
Trichloroethylene	ug/L	ND	1	ND	ND	ND	1	2607609
Trichlorofluoromethane (FREON 11)	ug/L	ND	8	ND	ND	ND	10	2607609
Vinyl Chloride	ug/L	ND	0.5	ND	ND	ND	0.7	2607609
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	99		101 (1)	98 (1)	99 (1)		2607609
D4-1,2-Dichloroethane	%	99		103	101	101		2607609
D8-Toluene	%	99		99	100	100		2607609

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC analysis performed on previously opened vial.

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ATLANTIC VOC IN WATER (WATER)

Maxxam ID		KU3842	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Chlorobenzenes								
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.7	2607609
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Chlorobenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Volatile Organics								
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	3	2607609
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.7	2607609
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,2-Dichloropropane	ug/L	ND	ND	2	7	7	1	2607609
Benzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Bromodichloromethane	ug/L	ND	ND	ND	ND	ND	1	2607609
Bromoform	ug/L	ND	ND	ND	ND	ND	1	2607609
Bromomethane	ug/L	ND	ND	ND	ND	ND	4	2607609
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	ND	1	2607609
Chloroethane	ug/L	ND	ND	ND	ND	ND	10	2607609
Chloroform	ug/L	ND	ND	ND	ND	ND	1	2607609
Chloromethane	ug/L	ND	ND	ND	ND	ND	10	2607609
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	3	2607609
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	3	2607609
Dibromochloromethane	ug/L	ND	ND	ND	ND	ND	1	2607609
Ethylbenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Ethylene Dibromide	ug/L	ND	ND	ND	ND	ND	1	2607609
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	ND	4	2607609
o-Xylene	ug/L	ND	ND	ND	ND	ND	1	2607609
p+m-Xylene	ug/L	ND	ND	ND	ND	ND	3	2607609
Styrene	ug/L	ND	ND	ND	ND	ND	1	2607609
Tetrachloroethylene	ug/L	ND	ND	ND	ND	ND	1	2607609
Toluene	ug/L	ND	ND	ND	ND	ND	1	2607609

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

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ATLANTIC VOC IN WATER (WATER)

Maxxam ID		KU3842	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	3	2607609
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	1	2607609
Trichloroethylene	ug/L	ND	ND	ND	ND	ND	1	2607609
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	ND	10	2607609
Vinyl Chloride	ug/L	ND	ND	ND	ND	ND	0.7	2607609
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	101 (1)	100 (1)	99 (1)	97 (2)	97 (2)		2607609
D4-1,2-Dichloroethane	%	102	102	103	101	104		2607609
D8-Toluene	%	99	101	99	99	99		2607609

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC analysis performed on previously opened vial.
(2) VOC analysis performed on previously opened vial. VOC sample contained sediment.

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RESULTS OF ANALYSES OF LEACHATE

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
Inorganics					
Chromium (VI)	mg/L	0.001	ND	0.001	2616418
Phenols-4AAP	mg/L	0.003	0.004	0.001	2613900
Total Suspended Solids	mg/L	5	5	1	2607211
Sulphide	mg/L	ND	ND	0.02	2607645

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

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Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

MERCURY BY COLD VAPOUR AA (LEACHATE)

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
Metals					
Total Mercury (Hg)	ug/L	ND	ND	0.013	2610669

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

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Client Project #: 115080.00
Site Location: LANDFILL

SEMI-VOLATILE ORGANICS BY GC-MS (LEACHATE)

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	ug/L	ND	ND	0.05	2607369
2-Methylnaphthalene	ug/L	ND	ND	0.05	2607369
Acenaphthene	ug/L	ND	ND	0.01	2607369
Acenaphthylene	ug/L	ND	ND	0.01	2607369
Anthracene	ug/L	ND	ND	0.01	2607369
Benzo(a)anthracene	ug/L	ND	ND	0.01	2607369
Benzo(a)pyrene	ug/L	ND	ND	0.01	2607369
Benzo(b)fluoranthene	ug/L	ND	ND	0.01	2607369
Benzo(g,h,i)perylene	ug/L	ND	ND	0.01	2607369
Benzo(j)fluoranthene	ug/L	ND	ND	0.01	2607369
Benzo(k)fluoranthene	ug/L	ND	ND	0.01	2607369
Chrysene	ug/L	ND	ND	0.01	2607369
Dibenz(a,h)anthracene	ug/L	ND	ND	0.01	2607369
Fluoranthene	ug/L	ND	ND	0.01	2607369
Fluorene	ug/L	ND	ND	0.01	2607369
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	0.01	2607369
Naphthalene	ug/L	ND	ND	0.2	2607369
Perylene	ug/L	ND	ND	0.01	2607369
Phenanthrene	ug/L	ND	ND	0.01	2607369
Pyrene	ug/L	0.02	ND	0.01	2607369
Surrogate Recovery (%)					
D10-Anthracene	%	87	78		2607369
D14-Terphenyl	%	104	85		2607369
D8-Acenaphthylene	%	106	86		2607369

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

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Client Project #: 115080.00
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POLYCHLORINATED BIPHENYLS BY GC-ECD (LEACHATE)

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	ND	ND	0.05	2610696
Surrogate Recovery (%)					
Decachlorobiphenyl	%	71	79		2610696

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

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Site Location: LANDFILL

RESULTS OF ANALYSES OF WATER

Maxxam ID		KU3798		KU3816	KU3818		KU3841	KU3842		
Sampling Date		2011/09/02		2011/09/02	2011/09/02		2011/09/02	2011/09/02		
COC Number		06801		06801	06801		06801	06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**RDL**	**MW93-1A**	**MW93-2**	**RDL**	**QC Batch**
Inorganics										
Total Suspended Solids	mg/L	840	100	160	810	5	11	19	1	2607211

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		KU3843		KU3844	KU3844		KU3845	KU3846		
Sampling Date		2011/09/02		2011/09/02	2011/09/02		2011/09/02	2011/09/02		
COC Number		06801		06801	06801		06801	06802		
	Units	**MW93-2A**	**RDL**	**MW10-1**	**MW10-1 Lab-Dup**	**RDL**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Inorganics										
Total Suspended Solids	mg/L	330	20	400	320	10	7000	9400	200	2607211

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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MERCURY BY COLD VAPOUR AA (WATER)

Maxxam ID		KU3798	KU3816	KU3818	KU3841	KU3842		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**SURFACE -UP**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**MW93-2**	**RDL**	**QC Batch**
Metals								
Total Mercury (Hg)	ug/L	0.023	ND	ND	0.035	0.015	0.013	2610669

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

Maxxam ID		KU3843	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2A**	**MW93-2A Lab-Dup**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Metals								
Total Mercury (Hg)	ug/L	ND	ND	ND	0.092	0.099	0.013	2613377

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

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KU3798	KU3816	KU3818	KU3841	KU3842		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**SURFACE -UP**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**MW93-2**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons								
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	0.05	2607369
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	ND	0.05	2607369
Acenaphthene	ug/L	ND	ND	0.01	ND	ND	0.01	2607369
Acenaphthylene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Anthracene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Benzo(b)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Benzo(j)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Chrysene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Fluoranthene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Fluorene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Naphthalene	ug/L	ND	ND	ND	ND	ND	0.2	2607369
Perylene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Phenanthrene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Pyrene	ug/L	ND	ND	ND	ND	ND	0.01	2607369
Surrogate Recovery (%)								
D10-Anthracene	%	54	52	88	67	71		2607369
D14-Terphenyl	%	77	75	50 (1)	81	83		2607369
D8-Acenaphthylene	%	87	85	59	84	73		2607369

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) PAH sample decanted due to sediment.
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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06802		
	Units	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons							
1-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.05	2607369
2-Methylnaphthalene	ug/L	ND	ND	ND	ND	0.05	2607369
Acenaphthene	ug/L	ND	ND	ND	ND	0.01	2607369
Acenaphthylene	ug/L	ND	ND	ND	ND	0.01	2607369
Anthracene	ug/L	ND	ND	ND	ND	0.01	2607369
Benzo(a)anthracene	ug/L	ND	ND	ND	ND	0.01	2607369
Benzo(a)pyrene	ug/L	ND	ND	ND	ND	0.01	2607369
Benzo(b)fluoranthene	ug/L	ND	ND	ND	ND	0.01	2607369
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	ND	0.01	2607369
Benzo(j)fluoranthene	ug/L	ND	ND	ND	ND	0.01	2607369
Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	0.01	2607369
Chrysene	ug/L	ND	ND	ND	ND	0.01	2607369
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	0.01	2607369
Fluoranthene	ug/L	ND	ND	ND	ND	0.01	2607369
Fluorene	ug/L	ND	ND	ND	ND	0.01	2607369
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND	ND	ND	0.01	2607369
Naphthalene	ug/L	ND	ND	ND	ND	0.2	2607369
Perylene	ug/L	0.02	ND	0.04	0.04	0.01	2607369
Phenanthrene	ug/L	ND	ND	ND	ND	0.01	2607369
Pyrene	ug/L	ND	ND	ND	ND	0.01	2607369
Surrogate Recovery (%)							
D10-Anthracene	%	67	64	102	63		2607369
D14-Terphenyl	%	76	78	109 (1)	76 (1)		2607369
D8-Acenaphthylene	%	81	85	84	82		2607369

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) PAH sample decanted due to sediment.

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Maxxam Job #: B1D6608
Report Date: 2011/09/21

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		KU3798		KU3816	KU3818		KU3841		
Sampling Date		2011/09/02		2011/09/02	2011/09/02		2011/09/02		
COC Number		06801		06801	06801		06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**QC Batch**	**MW93-1A**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/L	ND	0.1	ND	ND	2610696	ND	0.05	2613278
Surrogate Recovery (%)									
Decachlorobiphenyl	%	42 (1)		66	36 (2)	2610696	73		2613278

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PCB RDL due to matrix / co-extractive interference.
(2) PCB sample contained sediment.

Maxxam ID		KU3842	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
PCBs								
Total PCB	ug/L	ND	ND	ND	ND	ND	0.05	2613278
Surrogate Recovery (%)								
Decachlorobiphenyl	%	81	60	70 (1)	49 (1)	68 (1)		2613278

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) PCB sample contained sediment.

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Package 1	0.0°C

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

GENERAL COMMENTS

Sample KU3797-01: TOC: The detection limit was increased due to sample matrix.

Sample KU3798-01: RCAp Ion Balance acceptable. Low ionic strength sample.

Sample KU3843-01: TOC: The detection limit was increased due to turbidity.

Poor RCAp Ion Balance due to sample matrix. Possible loss of cations due to lab filtration.

Sample KU3844-01: TOC: The detection limit was increased due to turbidity.

Sample KU3845-01: TOC: The sample was decanted due to sediment content.

Sample KU3846-01: TOC: The sample was decanted due to the sediment content.

Results relate only to the items tested.

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Quality Assurance Report

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607211	JHR	QC Standard	Total Suspended Solids	2011/09/08		98	%	80 - 120
		Method Blank	Total Suspended Solids	2011/09/08	ND, RDL=1		mg/L	
		RPD [KU3844-02]	Total Suspended Solids	2011/09/08	22.8		%	25
2607299	DLB	Matrix Spike	Total Aluminum (Al)	2011/09/08		104	%	80 - 120
			Total Antimony (Sb)	2011/09/08		102	%	80 - 120
			Total Arsenic (As)	2011/09/08		97	%	80 - 120
			Total Barium (Ba)	2011/09/08		97	%	80 - 120
			Total Beryllium (Be)	2011/09/08		96	%	80 - 120
			Total Bismuth (Bi)	2011/09/08		99	%	80 - 120
			Total Boron (B)	2011/09/08		98	%	80 - 120
			Total Cadmium (Cd)	2011/09/08		97	%	80 - 120
			Total Calcium (Ca)	2011/09/08		100	%	80 - 120
			Total Chromium (Cr)	2011/09/08		97	%	80 - 120
			Total Cobalt (Co)	2011/09/08		99	%	80 - 120
			Total Copper (Cu)	2011/09/08		98	%	80 - 120
			Total Iron (Fe)	2011/09/08		102	%	80 - 120
			Total Lead (Pb)	2011/09/08		98	%	80 - 120
			Total Magnesium (Mg)	2011/09/08		104	%	80 - 120
			Total Manganese (Mn)	2011/09/08		95	%	80 - 120
			Total Molybdenum (Mo)	2011/09/08		102	%	80 - 120
			Total Nickel (Ni)	2011/09/08		98	%	80 - 120
			Total Potassium (K)	2011/09/08		98	%	80 - 120
			Total Selenium (Se)	2011/09/08		97	%	80 - 120
			Total Silver (Ag)	2011/09/08		99	%	80 - 120
			Total Sodium (Na)	2011/09/08		97	%	80 - 120
			Total Strontium (Sr)	2011/09/08		97	%	80 - 120
			Total Thallium (Tl)	2011/09/08		100	%	80 - 120
			Total Tin (Sn)	2011/09/08		101	%	80 - 120
			Total Titanium (Ti)	2011/09/08		102	%	80 - 120
			Total Uranium (U)	2011/09/08		106	%	80 - 120
			Total Vanadium (V)	2011/09/08		98	%	80 - 120
			Total Zinc (Zn)	2011/09/08		98	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2011/09/08		103	%	80 - 120
			Total Antimony (Sb)	2011/09/08		97	%	80 - 120
			Total Arsenic (As)	2011/09/08		98	%	80 - 120
			Total Barium (Ba)	2011/09/08		97	%	80 - 120
			Total Beryllium (Be)	2011/09/08		101	%	80 - 120
			Total Bismuth (Bi)	2011/09/08		99	%	80 - 120
			Total Boron (B)	2011/09/08		102	%	80 - 120
			Total Cadmium (Cd)	2011/09/08		99	%	80 - 120
			Total Calcium (Ca)	2011/09/08		100	%	80 - 120
			Total Chromium (Cr)	2011/09/08		97	%	80 - 120
			Total Cobalt (Co)	2011/09/08		100	%	80 - 120
			Total Copper (Cu)	2011/09/08		99	%	80 - 120
			Total Iron (Fe)	2011/09/08		102	%	80 - 120
			Total Lead (Pb)	2011/09/08		98	%	80 - 120
			Total Magnesium (Mg)	2011/09/08		104	%	80 - 120
			Total Manganese (Mn)	2011/09/08		96	%	80 - 120
			Total Molybdenum (Mo)	2011/09/08		100	%	80 - 120
			Total Nickel (Ni)	2011/09/08		98	%	80 - 120
			Total Potassium (K)	2011/09/08		100	%	80 - 120
			Total Selenium (Se)	2011/09/08		100	%	80 - 120
			Total Silver (Ag)	2011/09/08		97	%	80 - 120
			Total Sodium (Na)	2011/09/08		97	%	80 - 120
			Total Strontium (Sr)	2011/09/08		96	%	80 - 120

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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607299	DLB	Spiked Blank	Total Thallium (Tl)	2011/09/08		99	%	80 - 120
			Total Tin (Sn)	2011/09/08		97	%	80 - 120
			Total Titanium (Ti)	2011/09/08		103	%	80 - 120
			Total Uranium (U)	2011/09/08		105	%	80 - 120
			Total Vanadium (V)	2011/09/08		98	%	80 - 120
			Total Zinc (Zn)	2011/09/08		98	%	80 - 120
		Method Blank	Total Aluminum (Al)	2011/09/08	9.7, RDL=5.0 (1)		ug/L	
			Total Antimony (Sb)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Boron (B)	2011/09/08	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2011/09/08	ND, RDL=0.017		ug/L	
			Total Calcium (Ca)	2011/09/08	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2011/09/08	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Iron (Fe)	2011/09/08	ND, RDL=50		ug/L	
			Total Lead (Pb)	2011/09/08	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2011/09/08	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Potassium (K)	2011/09/08	ND, RDL=100		ug/L	
			Total Selenium (Se)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2011/09/08	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2011/09/08	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2011/09/08	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2011/09/08	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2011/09/08	ND, RDL=5.0		ug/L	
		RPD	Total Arsenic (As)	2011/09/08	NC		%	25
2607369	SHR	Matrix Spike	D10-Anthracene	2011/09/21		61	%	30 - 130
			D14-Terphenyl	2011/09/21		76	%	30 - 130
			D8-Acenaphthylene	2011/09/21		76	%	30 - 130
			1-Methylnaphthalene	2011/09/21		74	%	30 - 130
			2-Methylnaphthalene	2011/09/21		76	%	30 - 130
			Acenaphthene	2011/09/21		81	%	30 - 130
			Acenaphthylene	2011/09/21		74	%	30 - 130
			Anthracene	2011/09/21		117	%	30 - 130
			Benzo(a)anthracene	2011/09/21		117	%	30 - 130
			Benzo(a)pyrene	2011/09/21		92	%	30 - 130
			Benzo(b)fluoranthene	2011/09/21		85	%	30 - 130
			Benzo(g,h,i)perylene	2011/09/21		92	%	30 - 130
			Benzo(j)fluoranthene	2011/09/21		90	%	30 - 130
			Benzo(k)fluoranthene	2011/09/21		80	%	30 - 130
			Chrysene	2011/09/21		117	%	30 - 130
			Dibenz(a,h)anthracene	2011/09/21		87	%	30 - 130
			Fluoranthene	2011/09/21		112	%	30 - 130
			Fluorene	2011/09/21		74	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2011/09/21		82	%	30 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607369	SHR	Matrix Spike	Naphthalene	2011/09/21		76	%	30 - 130
			Perylene	2011/09/21		87	%	30 - 130
			Phenanthrene	2011/09/21		98	%	30 - 130
			Pyrene	2011/09/21		110	%	30 - 130
		Spiked Blank	D10-Anthracene	2011/09/20		67	%	30 - 130
			D14-Terphenyl	2011/09/20		84	%	30 - 130
			D8-Acenaphthylene	2011/09/20		87	%	30 - 130
			1-Methylnaphthalene	2011/09/20		81	%	30 - 130
			2-Methylnaphthalene	2011/09/20		84	%	30 - 130
			Acenaphthene	2011/09/20		88	%	30 - 130
			Acenaphthylene	2011/09/20		83	%	30 - 130
			Anthracene	2011/09/20		136 (2)	%	30 - 130
			Benzo(a)anthracene	2011/09/20		116	%	30 - 130
			Benzo(a)pyrene	2011/09/20		87	%	30 - 130
			Benzo(b)fluoranthene	2011/09/20		84	%	30 - 130
			Benzo(g,h,i)perylene	2011/09/20		112	%	30 - 130
			Benzo(j)fluoranthene	2011/09/20		99	%	30 - 130
			Benzo(k)fluoranthene	2011/09/20		84	%	30 - 130
			Chrysene	2011/09/20		123	%	30 - 130
			Dibenz(a,h)anthracene	2011/09/20		96	%	30 - 130
			Fluoranthene	2011/09/20		119	%	30 - 130
			Fluorene	2011/09/20		83	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2011/09/20		88	%	30 - 130
			Naphthalene	2011/09/20		85	%	30 - 130
			Perylene	2011/09/20		88	%	30 - 130
			Phenanthrene	2011/09/20		93	%	30 - 130
			Pyrene	2011/09/20		116	%	30 - 130
		Method Blank	D10-Anthracene	2011/09/20		85	%	30 - 130
			D14-Terphenyl	2011/09/20		99	%	30 - 130
			D8-Acenaphthylene	2011/09/20		93	%	30 - 130
			1-Methylnaphthalene	2011/09/20	ND, RDL=0.05		ug/L	
			2-Methylnaphthalene	2011/09/20	ND, RDL=0.05		ug/L	
			Acenaphthene	2011/09/20	ND, RDL=0.01		ug/L	
			Acenaphthylene	2011/09/20	ND, RDL=0.01		ug/L	
			Anthracene	2011/09/20	ND, RDL=0.01		ug/L	
			Benzo(a)anthracene	2011/09/20	ND, RDL=0.01		ug/L	
			Benzo(a)pyrene	2011/09/20	ND, RDL=0.01		ug/L	
			Benzo(b)fluoranthene	2011/09/20	ND, RDL=0.01		ug/L	
			Benzo(g,h,i)perylene	2011/09/20	ND, RDL=0.01		ug/L	
			Benzo(j)fluoranthene	2011/09/20	ND, RDL=0.01		ug/L	
			Benzo(k)fluoranthene	2011/09/20	ND, RDL=0.01		ug/L	
			Chrysene	2011/09/20	ND, RDL=0.01		ug/L	
			Dibenz(a,h)anthracene	2011/09/20	ND, RDL=0.01		ug/L	
			Fluoranthene	2011/09/20	ND, RDL=0.01		ug/L	
			Fluorene	2011/09/20	ND, RDL=0.01		ug/L	
			Indeno(1,2,3-cd)pyrene	2011/09/20	ND, RDL=0.01		ug/L	
			Naphthalene	2011/09/20	ND, RDL=0.2		ug/L	
			Perylene	2011/09/20	ND, RDL=0.01		ug/L	
			Phenanthrene	2011/09/20	ND, RDL=0.01		ug/L	
			Pyrene	2011/09/20	ND, RDL=0.01		ug/L	
		RPD	1-Methylnaphthalene	2011/09/20	NC		%	40
			2-Methylnaphthalene	2011/09/20	NC		%	40
			Acenaphthene	2011/09/20	NC		%	40
			Acenaphthylene	2011/09/20	NC		%	40
			Anthracene	2011/09/20	NC		%	40

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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607369	SHR	RPD	Benzo(a)anthracene	2011/09/20	NC		%	40
			Benzo(a)pyrene	2011/09/20	NC (3)		%	40
			Benzo(b)fluoranthene	2011/09/20	NC (3)		%	40
			Benzo(g,h,i)perylene	2011/09/20	NC		%	40
			Benzo(j)fluoranthene	2011/09/20	NC		%	40
			Benzo(k)fluoranthene	2011/09/20	NC		%	40
			Chrysene	2011/09/20	NC		%	40
			Dibenz(a,h)anthracene	2011/09/20	NC		%	40
			Fluoranthene	2011/09/20	NC		%	40
			Fluorene	2011/09/20	NC		%	40
			Indeno(1,2,3-cd)pyrene	2011/09/20	NC		%	40
			Naphthalene	2011/09/20	NC		%	40
			Perylene	2011/09/20	NC (3)		%	40
			Phenanthrene	2011/09/20	NC		%	40
			Pyrene	2011/09/20	NC		%	40
2607495	DLB	Matrix Spike						
		[KU3818-02]	Dissolved Aluminum (Al)	2011/09/08		95	%	80 - 120
			Dissolved Antimony (Sb)	2011/09/08		99	%	80 - 120
			Dissolved Arsenic (As)	2011/09/08		96	%	80 - 120
			Dissolved Barium (Ba)	2011/09/08		NC	%	80 - 120
			Dissolved Beryllium (Be)	2011/09/08		99	%	80 - 120
			Dissolved Bismuth (Bi)	2011/09/08		92	%	80 - 120
			Dissolved Boron (B)	2011/09/08		96	%	80 - 120
			Dissolved Cadmium (Cd)	2011/09/08		99	%	80 - 120
			Dissolved Calcium (Ca)	2011/09/08		NC	%	80 - 120
			Dissolved Chromium (Cr)	2011/09/08		95	%	80 - 120
			Dissolved Cobalt (Co)	2011/09/08		94	%	80 - 120
			Dissolved Copper (Cu)	2011/09/08		93	%	80 - 120
			Dissolved Iron (Fe)	2011/09/08		97	%	80 - 120
			Dissolved Lead (Pb)	2011/09/08		94	%	80 - 120
			Dissolved Magnesium (Mg)	2011/09/08		NC	%	80 - 120
			Dissolved Manganese (Mn)	2011/09/08		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2011/09/08		NC	%	80 - 120
			Dissolved Nickel (Ni)	2011/09/08		93	%	80 - 120
			Dissolved Potassium (K)	2011/09/08		96	%	80 - 120
			Dissolved Selenium (Se)	2011/09/08		98	%	80 - 120
			Dissolved Silver (Ag)	2011/09/08		86	%	80 - 120
			Dissolved Sodium (Na)	2011/09/08		NC	%	80 - 120
			Dissolved Strontium (Sr)	2011/09/08		NC	%	80 - 120
			Dissolved Thallium (Tl)	2011/09/08		92	%	80 - 120
			Dissolved Tin (Sn)	2011/09/08		98	%	80 - 120
			Dissolved Titanium (Ti)	2011/09/08		98	%	80 - 120
			Dissolved Uranium (U)	2011/09/08		101	%	80 - 120
			Dissolved Vanadium (V)	2011/09/08		98	%	80 - 120
			Dissolved Zinc (Zn)	2011/09/08		96	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2011/09/08		99	%	80 - 120
			Dissolved Antimony (Sb)	2011/09/08		94	%	80 - 120
			Dissolved Arsenic (As)	2011/09/08		96	%	80 - 120
			Dissolved Barium (Ba)	2011/09/08		99	%	80 - 120
			Dissolved Beryllium (Be)	2011/09/08		99	%	80 - 120
			Dissolved Bismuth (Bi)	2011/09/08		92	%	80 - 120
			Dissolved Boron (B)	2011/09/08		96	%	80 - 120
			Dissolved Cadmium (Cd)	2011/09/08		97	%	80 - 120
			Dissolved Calcium (Ca)	2011/09/08		98	%	80 - 120
			Dissolved Chromium (Cr)	2011/09/08		96	%	80 - 120

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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607495	DLB	Spiked Blank	Dissolved Cobalt (Co)	2011/09/08		96	%	80 - 120
			Dissolved Copper (Cu)	2011/09/08		95	%	80 - 120
			Dissolved Iron (Fe)	2011/09/08		100	%	80 - 120
			Dissolved Lead (Pb)	2011/09/08		96	%	80 - 120
			Dissolved Magnesium (Mg)	2011/09/08		102	%	80 - 120
			Dissolved Manganese (Mn)	2011/09/08		93	%	80 - 120
			Dissolved Molybdenum (Mo)	2011/09/08		96	%	80 - 120
			Dissolved Nickel (Ni)	2011/09/08		95	%	80 - 120
			Dissolved Potassium (K)	2011/09/08		98	%	80 - 120
			Dissolved Selenium (Se)	2011/09/08		98	%	80 - 120
			Dissolved Silver (Ag)	2011/09/08		101	%	80 - 120
			Dissolved Sodium (Na)	2011/09/08		95	%	80 - 120
			Dissolved Strontium (Sr)	2011/09/08		92	%	80 - 120
			Dissolved Thallium (Tl)	2011/09/08		93	%	80 - 120
			Dissolved Tin (Sn)	2011/09/08		94	%	80 - 120
			Dissolved Titanium (Ti)	2011/09/08		100	%	80 - 120
			Dissolved Uranium (U)	2011/09/08		101	%	80 - 120
			Dissolved Vanadium (V)	2011/09/08		97	%	80 - 120
			Dissolved Zinc (Zn)	2011/09/08		97	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2011/09/08	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Bismuth (Bi)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2011/09/08	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2011/09/08	ND, RDL=0.017		ug/L	
			Dissolved Calcium (Ca)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2011/09/08	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Iron (Fe)	2011/09/08	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2011/09/08	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Potassium (K)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Silver (Ag)	2011/09/08	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2011/09/08	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2011/09/08	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2011/09/08	ND, RDL=5.0		ug/L	
		RPD [KU3841-02]	Dissolved Aluminum (Al)	2011/09/08	NC		%	25
			Dissolved Antimony (Sb)	2011/09/08	NC		%	25
			Dissolved Arsenic (As)	2011/09/08	NC		%	25
			Dissolved Barium (Ba)	2011/09/08	1.4		%	25
			Dissolved Beryllium (Be)	2011/09/08	NC		%	25
			Dissolved Bismuth (Bi)	2011/09/08	NC		%	25
			Dissolved Boron (B)	2011/09/08	NC		%	25

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607495	DLB	RPD [KU3841-02]	Dissolved Cadmium (Cd)	2011/09/08	NC		%	25
			Dissolved Calcium (Ca)	2011/09/08	2.7		%	25
			Dissolved Chromium (Cr)	2011/09/08	NC		%	25
			Dissolved Cobalt (Co)	2011/09/08	NC		%	25
			Dissolved Copper (Cu)	2011/09/08	NC		%	25
			Dissolved Iron (Fe)	2011/09/08	NC		%	25
			Dissolved Lead (Pb)	2011/09/08	NC		%	25
			Dissolved Magnesium (Mg)	2011/09/08	1		%	25
			Dissolved Manganese (Mn)	2011/09/08	0.4		%	25
			Dissolved Molybdenum (Mo)	2011/09/08	2.0		%	25
			Dissolved Nickel (Ni)	2011/09/08	NC		%	25
			Dissolved Potassium (K)	2011/09/08	0.3		%	25
			Dissolved Selenium (Se)	2011/09/08	NC		%	25
			Dissolved Silver (Ag)	2011/09/08	NC		%	25
			Dissolved Sodium (Na)	2011/09/08	0.3		%	25
			Dissolved Strontium (Sr)	2011/09/08	1.0		%	25
			Dissolved Thallium (Tl)	2011/09/08	NC		%	25
			Dissolved Tin (Sn)	2011/09/08	NC		%	25
			Dissolved Titanium (Ti)	2011/09/08	NC		%	25
			Dissolved Uranium (U)	2011/09/08	NC		%	25
			Dissolved Vanadium (V)	2011/09/08	NC		%	25
			Dissolved Zinc (Zn)	2011/09/08	NC		%	25
2607609	ASL	Matrix Spike [KU3798-01]	1,2-Dichlorobenzene	2011/09/14		105	%	70 - 130
			1,3-Dichlorobenzene	2011/09/14		100	%	70 - 130
			1,4-Dichlorobenzene	2011/09/14		100	%	70 - 130
			Chlorobenzene	2011/09/14		111	%	70 - 130
			1,1,1-Trichloroethane	2011/09/14		100	%	70 - 130
			1,1,2,2-Tetrachloroethane	2011/09/14		111	%	70 - 130
			1,1,2-Trichloroethane	2011/09/14		111	%	70 - 130
			1,1-Dichloroethane	2011/09/14		100	%	70 - 130
			1,1-Dichloroethylene	2011/09/14		100	%	70 - 130
			1,2-Dichloroethane	2011/09/14		105	%	70 - 130
			1,2-Dichloropropane	2011/09/14		105	%	70 - 130
			4-Bromofluorobenzene	2011/09/14		99	%	70 - 130
			Benzene	2011/09/14		107	%	70 - 130
			Bromodichloromethane	2011/09/14		95	%	70 - 130
			Bromoform	2011/09/14		79	%	70 - 130
			Bromomethane	2011/09/14		89	%	70 - 130
			Carbon Tetrachloride	2011/09/14		95	%	70 - 130
			Chloroethane	2011/09/14		100	%	70 - 130
			Chloroform	2011/09/14		105	%	70 - 130
			Chloromethane	2011/09/14		79	%	70 - 130
			cis-1,2-Dichloroethylene	2011/09/14		100	%	70 - 130
			cis-1,3-Dichloropropene	2011/09/14		89	%	70 - 130
			D4-1,2-Dichloroethane	2011/09/14		98	%	70 - 130
			D8-Toluene	2011/09/14		99	%	70 - 130
			Dibromochloromethane	2011/09/14		84	%	70 - 130
			Ethylbenzene	2011/09/14		105	%	70 - 130
			Ethylene Dibromide	2011/09/14		105	%	70 - 130
			Methylene Chloride(Dichloromethane)	2011/09/14		105	%	70 - 130
			o-Xylene	2011/09/14		110	%	70 - 130
			p+m-Xylene	2011/09/14		105	%	70 - 130
			Styrene	2011/09/14		85	%	70 - 130
			Tetrachloroethylene	2011/09/14		105	%	70 - 130

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Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607609	ASL	Matrix Spike						
		[KU3798-01]	Toluene	2011/09/14		105	%	70 - 130
			trans-1,2-Dichloroethylene	2011/09/14		105	%	70 - 130
			trans-1,3-Dichloropropene	2011/09/14		79	%	70 - 130
			Trichloroethylene	2011/09/14		109	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2011/09/14		100	%	70 - 130
			Vinyl Chloride	2011/09/14		84	%	70 - 130
		Spiked Blank	1,2-Dichlorobenzene	2011/09/14		113	%	70 - 130
			1,3-Dichlorobenzene	2011/09/14		108	%	70 - 130
			1,4-Dichlorobenzene	2011/09/14		109	%	70 - 130
			Chlorobenzene	2011/09/14		112	%	70 - 130
			1,1,1-Trichloroethane	2011/09/14		109	%	70 - 130
			1,1,2,2-Tetrachloroethane	2011/09/14		103	%	70 - 130
			1,1,2-Trichloroethane	2011/09/14		109	%	70 - 130
			1,1-Dichloroethane	2011/09/14		110	%	70 - 130
			1,1-Dichloroethylene	2011/09/14		115	%	70 - 130
			1,2-Dichloroethane	2011/09/14		109	%	70 - 130
			1,2-Dichloropropane	2011/09/14		107	%	70 - 130
			4-Bromofluorobenzene	2011/09/14		99	%	70 - 130
			Benzene	2011/09/14		110	%	70 - 130
			Bromodichloromethane	2011/09/14		95	%	70 - 130
			Bromoform	2011/09/14		77	%	70 - 130
			Bromomethane	2011/09/14		108	%	70 - 130
			Carbon Tetrachloride	2011/09/14		102	%	70 - 130
			Chloroethane	2011/09/14		108	%	70 - 130
			Chloroform	2011/09/14		111	%	70 - 130
			Chloromethane	2011/09/14		91	%	70 - 130
			cis-1,2-Dichloroethylene	2011/09/14		112	%	70 - 130
			cis-1,3-Dichloropropene	2011/09/14		93	%	70 - 130
			D4-1,2-Dichloroethane	2011/09/14		100	%	70 - 130
			D8-Toluene	2011/09/14		100	%	70 - 130
			Dibromochloromethane	2011/09/14		90	%	70 - 130
			Ethylbenzene	2011/09/14		111	%	70 - 130
			Ethylene Dibromide	2011/09/14		108	%	70 - 130
			Methylene Chloride(Dichloromethane)	2011/09/14		120	%	70 - 130
			o-Xylene	2011/09/14		114	%	70 - 130
			p+m-Xylene	2011/09/14		113	%	70 - 130
			Styrene	2011/09/14		111	%	70 - 130
			Tetrachloroethylene	2011/09/14		113	%	70 - 130
			Toluene	2011/09/14		111	%	70 - 130
			trans-1,2-Dichloroethylene	2011/09/14		112	%	70 - 130
			trans-1,3-Dichloropropene	2011/09/14		83	%	70 - 130
			Trichloroethylene	2011/09/14		112	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2011/09/14		110	%	70 - 130
			Vinyl Chloride	2011/09/14		98	%	70 - 130
		Method Blank	1,2-Dichlorobenzene	2011/09/14	ND, RDL=0.5		ug/L	
			1,3-Dichlorobenzene	2011/09/14	ND, RDL=1		ug/L	
			1,4-Dichlorobenzene	2011/09/14	ND, RDL=1		ug/L	
			Chlorobenzene	2011/09/14	ND, RDL=1		ug/L	
			1,1,1-Trichloroethane	2011/09/14	ND, RDL=1		ug/L	
			1,1,2,2-Tetrachloroethane	2011/09/14	ND, RDL=1		ug/L	
			1,1,2-Trichloroethane	2011/09/14	ND, RDL=1		ug/L	
			1,1-Dichloroethane	2011/09/14	ND, RDL=2		ug/L	
			1,1-Dichloroethylene	2011/09/14	ND, RDL=0.5		ug/L	
			1,2-Dichloroethane	2011/09/14	ND, RDL=1		ug/L	

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Attention: Kelly MacDougall
Client Project #: 115080.00
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Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607609	ASL	Method Blank	1,2-Dichloropropane	2011/09/14	ND, RDL=1		ug/L	
			4-Bromofluorobenzene	2011/09/14		101	%	70 - 130
			Benzene	2011/09/14	ND, RDL=1		ug/L	
			Bromodichloromethane	2011/09/14	ND, RDL=1		ug/L	
			Bromoform	2011/09/14	ND, RDL=1		ug/L	
			Bromomethane	2011/09/14	ND, RDL=3		ug/L	
			Carbon Tetrachloride	2011/09/14	ND, RDL=1		ug/L	
			Chloroethane	2011/09/14	ND, RDL=8		ug/L	
			Chloroform	2011/09/14	ND, RDL=1		ug/L	
			Chloromethane	2011/09/14	ND, RDL=8		ug/L	
			cis-1,2-Dichloroethylene	2011/09/14	ND, RDL=2		ug/L	
			cis-1,3-Dichloropropene	2011/09/14	ND, RDL=2		ug/L	
			D4-1,2-Dichloroethane	2011/09/14		101	%	70 - 130
			D8-Toluene	2011/09/14		99	%	70 - 130
			Dibromochloromethane	2011/09/14	ND, RDL=1		ug/L	
			Ethylbenzene	2011/09/14	ND, RDL=1		ug/L	
			Ethylene Dibromide	2011/09/14	ND, RDL=1		ug/L	
			Methylene Chloride(Dichloromethane)	2011/09/14	ND, RDL=3		ug/L	
			o-Xylene	2011/09/14	ND, RDL=1		ug/L	
			p+m-Xylene	2011/09/14	ND, RDL=2		ug/L	
			Styrene	2011/09/14	ND, RDL=1		ug/L	
			Tetrachloroethylene	2011/09/14	ND, RDL=1		ug/L	
			Toluene	2011/09/14	ND, RDL=1		ug/L	
			trans-1,2-Dichloroethylene	2011/09/14	ND, RDL=2		ug/L	
			trans-1,3-Dichloropropene	2011/09/14	ND, RDL=1		ug/L	
			Trichloroethylene	2011/09/14	ND, RDL=1		ug/L	
			Trichlorofluoromethane (FREON 11)	2011/09/14	ND, RDL=8		ug/L	
			Vinyl Chloride	2011/09/14	ND, RDL=0.5		ug/L	
		RPD [KU3629-01]	1,2-Dichlorobenzene	2011/09/14	NC		%	40
			1,3-Dichlorobenzene	2011/09/14	NC		%	40
			1,4-Dichlorobenzene	2011/09/14	NC		%	40
			Chlorobenzene	2011/09/14	NC		%	40
			1,1,1-Trichloroethane	2011/09/14	NC		%	40
			1,1,2,2-Tetrachloroethane	2011/09/14	NC		%	40
			1,1,2-Trichloroethane	2011/09/14	NC		%	40
			1,1-Dichloroethane	2011/09/14	NC		%	40
			1,1-Dichloroethylene	2011/09/14	NC		%	40
			1,2-Dichloroethane	2011/09/14	NC		%	40
			1,2-Dichloropropane	2011/09/14	NC		%	40
			Benzene	2011/09/14	NC		%	40
			Bromodichloromethane	2011/09/14	NC		%	40
			Bromoform	2011/09/14	NC		%	40
			Bromomethane	2011/09/14	NC		%	40
			Carbon Tetrachloride	2011/09/14	NC		%	40
			Chloroethane	2011/09/14	NC		%	40
			Chloroform	2011/09/14	NC		%	40
			Chloromethane	2011/09/14	NC		%	40
			cis-1,2-Dichloroethylene	2011/09/14	NC		%	40
			cis-1,3-Dichloropropene	2011/09/14	NC		%	40
			Dibromochloromethane	2011/09/14	NC		%	40
			Ethylbenzene	2011/09/14	NC		%	40
			Ethylene Dibromide	2011/09/14	NC		%	40
			Methylene Chloride(Dichloromethane)	2011/09/14	NC		%	40
			o-Xylene	2011/09/14	NC		%	40
			p+m-Xylene	2011/09/14	NC		%	40

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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607609	ASL	RPD [KU3629-01]	Styrene	2011/09/14	NC		%	40
			Tetrachloroethylene	2011/09/14	NC		%	40
			Toluene	2011/09/14	NC		%	40
			trans-1,2-Dichloroethylene	2011/09/14	NC		%	40
			trans-1,3-Dichloropropene	2011/09/14	NC		%	40
			Trichloroethylene	2011/09/14	NC		%	40
			Trichlorofluoromethane (FREON 11)	2011/09/14	NC		%	40
			Vinyl Chloride	2011/09/14	NC		%	40
2607645	XQI	Matrix Spike	Sulphide	2011/09/09		90	%	80 - 120
		Spiked Blank	Sulphide	2011/09/09		97	%	80 - 120
		Method Blank	Sulphide	2011/09/09	ND, RDL=0.02		mg/L	
		RPD	Sulphide	2011/09/09	NC		%	20
2610669	JRC	Matrix Spike	Total Mercury (Hg)	2011/09/12		113	%	80 - 120
		QC Standard	Total Mercury (Hg)	2011/09/12		105	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2011/09/12		108	%	80 - 120
		Method Blank	Total Mercury (Hg)	2011/09/12	ND, RDL=0.013		ug/L	
		RPD	Total Mercury (Hg)	2011/09/12	NC		%	25
2610696	KJO	Matrix Spike	Decachlorobiphenyl	2011/09/14		80	%	30 - 130
			Total PCB	2011/09/14		79	%	70 - 130
		Spiked Blank	Decachlorobiphenyl	2011/09/14		84	%	30 - 130
			Total PCB	2011/09/14		97	%	70 - 130
		Method Blank	Decachlorobiphenyl	2011/09/14		86	%	30 - 130
			Total PCB	2011/09/14	ND, RDL=0.05		ug/L	
		RPD	Total PCB	2011/09/14	NC		%	40
2610932	MJL	QC Standard	pH	2011/09/13		102	%	80 - 120
		RPD [KU3798-02]	pH	2011/09/13	0		%	25
2610933	MJL	Spiked Blank	Conductivity	2011/09/12		100	%	80 - 120
		Method Blank	Conductivity	2011/09/12	ND, RDL=1		uS/cm	
		RPD [KU3798-02]	Conductivity	2011/09/12	0.7		%	25
2611762	MJL	QC Standard	pH	2011/09/13		100	%	80 - 120
		RPD	pH	2011/09/13	0.7		%	25
2611764	MJL	Spiked Blank	Conductivity	2011/09/13		99	%	80 - 120
		Method Blank	Conductivity	2011/09/13	1, RDL=1		uS/cm	
		RPD	Conductivity	2011/09/13	0.6		%	25
2613145	MCN	Matrix Spike	Total Alkalinity (Total as CaCO3)	2011/09/14		NC	%	80 - 120
		QC Standard	Total Alkalinity (Total as CaCO3)	2011/09/14		106	%	80 - 120
		Spiked Blank	Total Alkalinity (Total as CaCO3)	2011/09/14		101	%	80 - 120
		Method Blank	Total Alkalinity (Total as CaCO3)	2011/09/14	ND, RDL=5		mg/L	
		RPD	Total Alkalinity (Total as CaCO3)	2011/09/14	1.8		%	25
2613147	ARS	Matrix Spike	Dissolved Chloride (Cl)	2011/09/15		95	%	80 - 120
		QC Standard	Dissolved Chloride (Cl)	2011/09/15		98	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2011/09/15		101	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2011/09/15	ND, RDL=1		mg/L	
		RPD	Dissolved Chloride (Cl)	2011/09/15	1.4		%	25
2613149	SMT	Matrix Spike	Dissolved Sulphate (SO4)	2011/09/15		106	%	80 - 120
		QC Standard	Dissolved Sulphate (SO4)	2011/09/15		105	%	N/A
		Spiked Blank	Dissolved Sulphate (SO4)	2011/09/15		103	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2011/09/15	ND, RDL=2		mg/L	
		RPD	Dissolved Sulphate (SO4)	2011/09/15	NC		%	25
2613150	ABU	Matrix Spike	Reactive Silica (SiO2)	2011/09/14		NC	%	80 - 120
		QC Standard	Reactive Silica (SiO2)	2011/09/14		102	%	75 - 125
		Spiked Blank	Reactive Silica (SiO2)	2011/09/14		101	%	80 - 120
		Method Blank	Reactive Silica (SiO2)	2011/09/14	ND, RDL=0.5		mg/L	
		RPD	Reactive Silica (SiO2)	2011/09/14	0.6		%	25
2613151	SMT	QC Standard	Colour	2011/09/15		107	%	80 - 120

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2613151	SMT	Method Blank	Colour	2011/09/15	ND, RDL=5		TCU	
		RPD	Colour	2011/09/15	NC		%	25
2613153	ARS	Matrix Spike	Orthophosphate (P)	2011/09/15		104	%	80 - 120
		QC Standard	Orthophosphate (P)	2011/09/15		105	%	80 - 120
		Spiked Blank	Orthophosphate (P)	2011/09/15		109	%	80 - 120
		Method Blank	Orthophosphate (P)	2011/09/15	ND, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2011/09/15	NC		%	25
2613154	ARS	Matrix Spike	Nitrate + Nitrite	2011/09/15		103	%	80 - 120
		QC Standard	Nitrate + Nitrite	2011/09/15		102	%	80 - 120
		Spiked Blank	Nitrate + Nitrite	2011/09/15		102	%	80 - 120
		Method Blank	Nitrate + Nitrite	2011/09/15	ND, RDL=0.05		mg/L	
		RPD	Nitrate + Nitrite	2011/09/15	NC		%	25
2613155	SMT	Matrix Spike	Nitrite (N)	2011/09/15		98	%	80 - 120
		QC Standard	Nitrite (N)	2011/09/15		98	%	80 - 120
		Spiked Blank	Nitrite (N)	2011/09/15		96	%	80 - 120
		Method Blank	Nitrite (N)	2011/09/15	ND, RDL=0.01		mg/L	
		RPD	Nitrite (N)	2011/09/15	NC		%	25
2613278	KJO	Matrix Spike	Decachlorobiphenyl	2011/09/16		109	%	30 - 130
			Total PCB	2011/09/16		84	%	70 - 130
		Spiked Blank	Decachlorobiphenyl	2011/09/16		92	%	30 - 130
			Total PCB	2011/09/16		79	%	70 - 130
		Method Blank	Decachlorobiphenyl	2011/09/16		91	%	30 - 130
			Total PCB	2011/09/16	ND, RDL=0.05		ug/L	
		RPD	Total PCB	2011/09/16	NC		%	40
2613377	JRC	Matrix Spike						
		[KU3844-02]	Total Mercury (Hg)	2011/09/14		94	%	80 - 120
		QC Standard	Total Mercury (Hg)	2011/09/14		83	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2011/09/14		85	%	80 - 120
		Method Blank	Total Mercury (Hg)	2011/09/14	ND, RDL=0.013		ug/L	
		RPD [KU3843-02]	Total Mercury (Hg)	2011/09/14	NC		%	25
2613410	MCN	Matrix Spike						
		[KU3816-02]	Nitrogen (Ammonia Nitrogen)	2011/09/15		88	%	80 - 120
		QC Standard	Nitrogen (Ammonia Nitrogen)	2011/09/14		99	%	80 - 120
		Spiked Blank	Nitrogen (Ammonia Nitrogen)	2011/09/14		97	%	80 - 120
		Method Blank	Nitrogen (Ammonia Nitrogen)	2011/09/14	ND, RDL=0.05		mg/L	
		RPD [KU3816-02]	Nitrogen (Ammonia Nitrogen)	2011/09/15	NC		%	25
2613419	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2011/09/15		NC	%	80 - 120
		QC Standard	Nitrogen (Ammonia Nitrogen)	2011/09/15		95	%	80 - 120
		Spiked Blank	Nitrogen (Ammonia Nitrogen)	2011/09/15		91	%	80 - 120
		Method Blank	Nitrogen (Ammonia Nitrogen)	2011/09/15	ND, RDL=0.05		mg/L	
		RPD	Nitrogen (Ammonia Nitrogen)	2011/09/15	6.1		%	25
2613427	MJL	QC Standard	Turbidity	2011/09/14		101	%	80 - 120
		Method Blank	Turbidity	2011/09/14	ND, RDL=0.1		NTU	
		RPD [KU3818-02]	Turbidity	2011/09/14	NC		%	25
2613430	MJL	QC Standard	Turbidity	2011/09/14		99	%	80 - 120
		Method Blank	Turbidity	2011/09/14	ND, RDL=0.1		NTU	
		RPD	Turbidity	2011/09/14	NC		%	25
2613900	SSI	Matrix Spike	Phenols-4AAP	2011/09/14		94	%	80 - 120
		QC Standard	Phenols-4AAP	2011/09/14		105	%	80 - 120
		Spiked Blank	Phenols-4AAP	2011/09/14		100	%	80 - 120
		Method Blank	Phenols-4AAP	2011/09/14	ND, RDL=0.001		mg/L	
		RPD	Phenols-4AAP	2011/09/14	5.3		%	25
2614171	CRA	Matrix Spike	Total Organic Carbon (C)	2011/09/14		99	%	80 - 120
		QC Standard	Total Organic Carbon (C)	2011/09/14		94	%	80 - 120
		Spiked Blank	Total Organic Carbon (C)	2011/09/14		104	%	80 - 120

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2614171	CRA	Method Blank	Total Organic Carbon (C)	2011/09/14	ND, RDL=0.5		mg/L	
		RPD	Total Organic Carbon (C)	2011/09/14	NC		%	25
2616418	SMT	Matrix Spike	Chromium (VI)	2011/09/16		99	%	80 - 120
		QC Standard	Chromium (VI)	2011/09/16		101	%	80 - 120
		Spiked Blank	Chromium (VI)	2011/09/16		99	%	80 - 120
		Method Blank	Chromium (VI)	2011/09/16	ND, RDL=0.001		mg/L	
		RPD	Chromium (VI)	2011/09/16	NC		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Low level lab contamination. Minimal impact on data quality.
(2) Spike: < 10 % of compounds in multi-component analysis in violation.
(3) Elevated PAH RDL(s) due to matrix / co-extractive interference.

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Validation Signature Page

Maxxam Job #: B1D6608

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

MIKE MACGILLIVRAY, Scientific Specialist (Inorganics)

KEVIN MACDONALD, Inorganics Supervisor

ROSE MACDONALD, Scientific Specialist (Organics)

CRISTINA CARRIERE, Scientific Services

==========

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Maxxam Analytics Inc

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

CHAIN OF CUSTODY RECORD

06801

INVOICE INFORMATION:
Company Name: CBCL
Contact Name: Kelly MacDougall
Address: 187 Kenmount Rd
St. Johns, NL
Email: kmacdougall@cbcl.ca
Ph: 709-689-8405 Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name: Same
Address:
Email:
Ph: Fax:

PO #:
Project #: 113066.00
Proj. Name: Come By Chance
Location: Landfill
Quotation#:
Submitted By: K. MacDougall
Site Task #:

MAXXAM JOB NUMBER: B1D6608
ENTERED BY, Init: AL
Client Code: 19037

Specify Guideline Requirements:
Please report phosphates as P
Lab filtration & preservation is required for groundwater samples
Dissolved RCAp MS for GW samples

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

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

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury (Mercury is not included in soil or water metals scan)	Metals Soil: Available Metals Digest Default Method (HNO₃/H₂O₂)	Metals Soil: Total Digest - for sediments (HNO₃/HF/HClO₄)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	TPH MUST (BTEX, C6-C32)	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C6-C32	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
PLCS	leachate	Sept 2, 2011	21 various		✓		✓			✓						✓				✓	✓	✓	TSS, Total Chromium, Sulphide, Phenolics
SLCS	leachate	Sept 2, 2011	21 various		✓		✓			✓						✓				✓	✓	✓	TSS, total phenolics, Sulphide, Chromium
Surface-up	SW	" "	12		✓		✓			✓						✓				✓	✓	✓	TSS
Surface-down	SW	" "	12		✓		✓			✓						✓				✓	✓	✓	TSS
MW93-1	GW	↓	↓		✓		✓			✓						✓				✓	✓	✓	TSS
MW93-1A	GW				✓		✓			✓						✓				✓	✓	✓	TSS
MW93-2	GW				✓		✓			✓						✓				✓	✓	✓	TSS
MW93-2A	GW				✓		✓			✓						✓				✓	✓	✓	TSS
MW10-1	GW				✓		✓			✓						✓				✓	✓	✓	TSS
MW10-1A	GW				✓		✓			✓						✓				✓	✓	✓	TSS

2011 SEP 7 AM 9:55

RELINQUISHED BY: (Signature/Print)	RECEIVED BY: (Signature/Print)	DATE / TIME	PURPOSE OF CHANGE / REMARKS
Kelly MacDougall / Kelly MacDougall	Duane Deekin / Duane Deekin	2011/09/02 4:45	SHIPPED FROM MAXXAM-NL; TPH Must

TEMP @ Maxxam Receipt: 0 °C
INTEGRITY Init: Yes No

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CHAIN OF CUSTODY RECORD
06802

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):		MAXXAM JOB NUMBER:
Company Name: CBCL	Company Name:	PO #:	B1D6608
Contact Name: Kelly macdougall	Contact Name:	Project #: 113050.00	
Address: 187 Kenmount Rd.	Address: Same	Proj. Name:	ENTERED BY, Init: AL
		Location:	
		Quotation#:	
Email: kmacdougall@cbcl.ca	Email:	Submitted By:	
Ph: Fax:	Ph: Fax:	Site Task #:	Client Code: ~~10937~~ 19037

Specify Guideline Requirements: Lab filtration? preservation req'd.

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

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

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	Metals Water: RCAp-30 Choose Total or Diss Metals	Metals Water: RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury (Mercury is not included in soil or water metals scan)	Metals Soil: Available Metals Digest Default Method (HNO₃/H₂O₂)	Metals Soil: Total Digest - for sediments (HNO₃/HF/HClO₄)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	TPH MUST (BTEX, C6-C32)	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C6-C32	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
DVP-A	GW	Sept 2	12		✓		✓			✓						✓			✓	✓	✓	✓	TSS
																							SHIPPED FROM
																							06-09-2011
																							MAXXAM-NL

RELINQUISHED BY: (Signature/Print)	RECEIVED BY: (Signature/Print)	DATE / TIME	PURPOSE OF CHANGE / REMARKS	TEMP @ Maxxam Receipt
Kelly MacDougall	Duane Deering	2011/09/02		0 — 2011 SEP 7 AM 9:55
Kelly MacDougall	Duane Deering / Dawson	4:45	TPH Must Done in [illegible]	INTEGRITY Yes No Init: [illegible]

Your Project #: 115080.00
Site Location: LANDFILL
Your C.O.C. #: 06801, 06802

Attention: Kelly MacDougall
CBCL Limited
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2011/09/19

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B1D6608
Received: 2011/09/07, 9:55

Sample Matrix: Leachate
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	2	N/A	2011/09/12	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity	2	N/A	2011/09/14	ATL SOP 00013 R4	Based on EPA310.2
Chloride	2	N/A	2011/09/15	ATL SOP 00014 R6	Based on SM4500-Cl-
Colour	2	N/A	2011/09/15	ATL SOP 00020 R3.	Based on SM2120C
Hexavalent chromium in water	2	N/A	2011/09/16	ATL SOP 00056 R1	Based on SM3500-Cr-B
Conductance - water	2	N/A	2011/09/12	ATL SOP 00004 R5/00006 R4	Based on SM2510B
Hardness (calculated as CaCO3)	2	N/A	2011/09/09	ATL SOP 00048	Based on SM2340B
Mercury - Total (CVAA,LL)	2	2011/09/09	2011/09/12	ATL SOP 00026 R6	Based on EPA245.1
Metals Water Total MS	2	2011/09/08	2011/09/08	ATL SOP 00059 R1	Based on EPA6020A
Ion Balance (% Difference)	2	N/A	2011/09/15		
Anion and Cation Sum	2	N/A	2011/09/15		
Nitrogen Ammonia - water	1	N/A	2011/09/14	ATL SOP 00015 R5	Based on USEPA 350.1
Nitrogen Ammonia - water	1	N/A	2011/09/15	ATL SOP 00015 R5	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	2	N/A	2011/09/15	ATL SOP 00016 R4	Based on USGS - Enz.
Nitrogen - Nitrite	2	N/A	2011/09/15	ATL SOP 00017 R4	Based on SM4500-NO2B
Nitrogen - Nitrate (as N)	2	N/A	2011/09/15	ATL SOP 00018 R3	Based on ASTMD3867
PCBs in water by GC/ECD	2	2011/09/09	2011/09/14	ATL SOP 00107 R4	Based on EPA8082
Phenols (4-AAP)	2	N/A	2011/09/14	ATL SOP 00039 R5	Based on EPA 420.2
pH	2	N/A	2011/09/13	ATL SOP 00003 R5/00005 R7	Based on SM4500H+B
Phosphorus - ortho	2	N/A	2011/09/15	ATL SOP 00021 R3	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	2	N/A	2011/09/15		
Sat. pH and Langelier Index (@ 4C)	2	N/A	2011/09/15		
Reactive Silica	2	N/A	2011/09/14	ATL SOP 00022 R3	Based on EPA 366.0
Sulphate	2	N/A	2011/09/15	ATL SOP 00023 R3	Based on EPA 375.4
Sulphide @	2	N/A	2011/09/09	CAM SOP-00455	SM 4500-S G
Total Dissolved Solids (TDS calc)	2	N/A	2011/09/15		
Organic carbon - Total (TOC)	2	N/A	2011/09/14	ATL SOP 00037 R4	Based on SM5310C
Total Suspended Solids	2	N/A	2011/09/08	ATL SOP 00007 R3	based on EPA 160.2
Turbidity	2	N/A	2011/09/14	ATL SOP 00011 R5	based on EPA 180.1
Volatile Organic Compounds in Water	2	2011/09/08	2011/09/14	ATL SOP 00122 R4	Based on EPA624

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	1	N/A	2011/09/12	CAM SOP-00102	APHA 4500-CO2 D

Your Project #: 115080.00
Site Location: LANDFILL
Your C.O.C. #: 06801, 06802

Attention: Kelly MacDougall
CBCL Limited
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2011/09/19

CERTIFICATE OF ANALYSIS

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	8	N/A	2011/09/13	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity	9	N/A	2011/09/14	ATL SOP 00013 R4	Based on EPA310.2
Chloride	9	N/A	2011/09/15	ATL SOP 00014 R6	Based on SM4500-Cl-
Colour	9	N/A	2011/09/15	ATL SOP 00020 R3.	Based on SM2120C
Conductance - water	1	N/A	2011/09/12	ATL SOP 00004 R5/00006 R4	Based on SM2510B
Conductance - water	8	N/A	2011/09/13	ATL SOP 00004 R5/00006 R4	Based on SM2510B
Hardness (calculated as CaCO3)	9	N/A	2011/09/09	ATL SOP 00048	Based on SM2340B
Mercury - Total (CVAA,LL)	5	2011/09/09	2011/09/12	ATL SOP 00026 R6	Based on EPA245.1
Mercury - Total (CVAA,LL)	4	2011/09/13	2011/09/14	ATL SOP 00026 R6	Based on EPA245.1
Metals Water Diss. MS	7	N/A	2011/09/08	ATL SOP 00059 R1	Based on EPA6020A
Metals Water Total MS	2	2011/09/08	2011/09/08	ATL SOP 00059 R1	Based on EPA6020A
Ion Balance (% Difference)	9	N/A	2011/09/15		
Anion and Cation Sum	9	N/A	2011/09/15		
Nitrogen Ammonia - water	9	N/A	2011/09/15	ATL SOP 00015 R5	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	9	N/A	2011/09/15	ATL SOP 00016 R4	Based on USGS - Enz.
Nitrogen - Nitrite	9	N/A	2011/09/15	ATL SOP 00017 R4	Based on SM4500-NO2B
Nitrogen - Nitrate (as N)	9	N/A	2011/09/15	ATL SOP 00018 R3	Based on ASTMD3867
PCBs in water by GC/ECD	3	2011/09/09	2011/09/14	ATL SOP 00107 R4	Based on EPA8082
PCBs in water by GC/ECD	6	2011/09/09	2011/09/16	ATL SOP 00107 R4	Based on EPA8082
pH	9	N/A	2011/09/13	ATL SOP 00003 R5/00005 R7	Based on SM4500H+B
Phosphorus - ortho	9	N/A	2011/09/15	ATL SOP 00021 R3	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	9	N/A	2011/09/15		
Sat. pH and Langelier Index (@ 4C)	9	N/A	2011/09/15		
Reactive Silica	9	N/A	2011/09/14	ATL SOP 00022 R3	Based on EPA 366.0
Sulphate	9	N/A	2011/09/15	ATL SOP 00023 R3	Based on EPA 375.4
Total Dissolved Solids (TDS calc)	9	N/A	2011/09/15		
Organic carbon - Total (TOC)	9	N/A	2011/09/14	ATL SOP 00037 R4	Based on SM5310C
Total Suspended Solids	9	N/A	2011/09/08	ATL SOP 00007 R3	based on EPA 160.2
Turbidity	9	N/A	2011/09/14	ATL SOP 00011 R5	based on EPA 180.1
Volatile Organic Compounds in Water	1	2011/09/08	2011/09/14	ATL SOP 00122 R4	Based on EPA624
Volatile Organic Compounds in Water	8	2011/09/08	2011/09/15	ATL SOP 00122 R4	Based on EPA624

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

(1) This test was performed by Maxxam Analytics Mississauga

../3

Your Project #: 115080.00
Site Location: LANDFILL
Your C.O.C. #: 06801, 06802

Attention: Kelly MacDougall
CBCL Limited
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2011/09/19

CERTIFICATE OF ANALYSIS

-3-

Encryption Key

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

KERI MACKAY, Project Manager - Bedford
Email: kmackay@maxxam.ca
Phone# (902) 420-0203 Ext:233

==========

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Total cover pages: 3

Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

RESULTS OF ANALYSES OF LEACHATE

Maxxam ID		KU3629		KU3797		
Sampling Date		2011/09/02		2011/09/02		
COC Number		06801		06801		
	Units	**PLCS**	**RDL**	**SLCS**	**RDL**	**QC Batch**
Calculated Parameters						
Anion Sum	me/L	4.21	N/A	6.93	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	167	1	267	1	2605950
Calculated TDS	mg/L	239	1	383	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	1	1	2	1	2605950
Cation Sum	me/L	4.06	N/A	6.60	N/A	2605954
Hardness (CaCO3)	mg/L	140	1	240	1	2605952
Ion Balance (% Difference)	%	1.81	N/A	2.44	N/A	2605953
Langelier Index (@ 20C)	N/A	0.366		0.749		2605958
Langelier Index (@ 4C)	N/A	0.116		0.500		2605959
Nitrate (N)	mg/L	0.32	0.05	0.48	0.05	2605955
Saturation pH (@ 20C)	N/A	7.51		7.17		2605958
Saturation pH (@ 4C)	N/A	7.76		7.42		2605959
Inorganics						
Total Alkalinity (Total as CaCO3)	mg/L	170	30	270	30	2613145
Dissolved Chloride (Cl)	mg/L	11	1	29	1	2613147
Chromium (VI)	mg/L	0.001	0.001	ND	0.001	2616418
Colour	TCU	18	5	10	5	2613151
Nitrate + Nitrite	mg/L	0.32	0.05	0.48	0.05	2613154
Nitrite (N)	mg/L	ND	0.01	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	ND	0.05	2613410
Total Organic Carbon (C)	mg/L	5.1	0.5	ND	1	2614171
Orthophosphate (P)	mg/L	ND	0.01	ND	0.01	2613153
pH	pH	7.88	N/A	7.92	N/A	2610932
Phenols-4AAP	mg/L	0.003	0.001	0.004	0.001	2613900
Reactive Silica (SiO2)	mg/L	12	0.5	19	0.5	2613150
Total Suspended Solids	mg/L	5	1	5	1	2607211
Dissolved Sulphate (SO4)	mg/L	25	2	34	2	2613149
Sulphide	mg/L	ND	0.02	ND	0.02	2607645
Turbidity	NTU	0.7	0.1	0.9	0.1	2613427
Conductivity	uS/cm	400	1	620	1	2610933

ND = Not detected
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QC Batch = Quality Control Batch

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Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

MERCURY BY COLD VAPOUR AA (LEACHATE)

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
Metals					
Total Mercury (Hg)	ug/L	ND	ND	0.013	2610669

ND = Not detected
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QC Batch = Quality Control Batch

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Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

ELEMENTS BY ICP/MS (LEACHATE)

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
Metals					
Total Aluminum (Al)	ug/L	41.2	23.7	5.0	2607299
Total Antimony (Sb)	ug/L	ND	ND	1.0	2607299
Total Arsenic (As)	ug/L	ND	ND	1.0	2607299
Total Barium (Ba)	ug/L	11.1	5.3	1.0	2607299
Total Beryllium (Be)	ug/L	ND	ND	1.0	2607299
Total Bismuth (Bi)	ug/L	ND	ND	2.0	2607299
Total Boron (B)	ug/L	650	1350	50	2607299
Total Cadmium (Cd)	ug/L	ND	ND	0.017	2607299
Total Calcium (Ca)	ug/L	46100	69700	100	2607299
Total Chromium (Cr)	ug/L	ND	63.2	1.0	2607299
Total Cobalt (Co)	ug/L	ND	ND	0.40	2607299
Total Copper (Cu)	ug/L	2.2	ND	2.0	2607299
Total Iron (Fe)	ug/L	342	ND	50	2607299
Total Lead (Pb)	ug/L	ND	ND	0.50	2607299
Total Magnesium (Mg)	ug/L	7070	16900	100	2607299
Total Manganese (Mn)	ug/L	369	241	2.0	2607299
Total Molybdenum (Mo)	ug/L	ND	ND	2.0	2607299
Total Nickel (Ni)	ug/L	ND	ND	2.0	2607299
Total Potassium (K)	ug/L	21000	28400	100	2607299
Total Selenium (Se)	ug/L	ND	ND	1.0	2607299
Total Silver (Ag)	ug/L	ND	ND	0.10	2607299
Total Sodium (Na)	ug/L	14300	23100	100	2607299
Total Strontium (Sr)	ug/L	104	183	2.0	2607299
Total Thallium (Tl)	ug/L	ND	ND	0.10	2607299
Total Tin (Sn)	ug/L	ND	ND	2.0	2607299
Total Titanium (Ti)	ug/L	ND	ND	2.0	2607299
Total Uranium (U)	ug/L	0.26	0.71	0.10	2607299
Total Vanadium (V)	ug/L	ND	ND	2.0	2607299
Total Zinc (Zn)	ug/L	14.0	32.2	5.0	2607299

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

Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

VOLATILE ORGANICS BY GC/MS (LEACHATE)

Maxxam ID		KU3629		KU3797		
Sampling Date		2011/09/02		2011/09/02		
COC Number		06801		06801		
	Units	**PLCS**	**RDL**	**SLCS**	**RDL**	**QC Batch**
Chlorobenzenes						
1,2-Dichlorobenzene	ug/L	ND	0.5	ND	0.7	2607609
1,3-Dichlorobenzene	ug/L	ND	1	ND	1	2607609
1,4-Dichlorobenzene	ug/L	ND	1	ND	1	2607609
Chlorobenzene	ug/L	ND	1	ND	1	2607609
Volatile Organics						
1,1,1-Trichloroethane	ug/L	ND	1	ND	1	2607609
1,1,2,2-Tetrachloroethane	ug/L	ND	1	ND	1	2607609
1,1,2-Trichloroethane	ug/L	ND	1	ND	1	2607609
1,1-Dichloroethane	ug/L	ND	2	ND	3	2607609
1,1-Dichloroethylene	ug/L	ND	0.5	ND	0.7	2607609
1,2-Dichloroethane	ug/L	ND	1	ND	1	2607609
1,2-Dichloropropane	ug/L	ND	1	ND	1	2607609
Benzene	ug/L	ND	1	ND	1	2607609
Bromodichloromethane	ug/L	ND	1	ND	1	2607609
Bromoform	ug/L	ND	1	ND	1	2607609
Bromomethane	ug/L	ND	3	ND	4	2607609
Carbon Tetrachloride	ug/L	ND	1	ND	1	2607609
Chloroethane	ug/L	ND	8	ND	10	2607609
Chloroform	ug/L	ND	1	ND	1	2607609
Chloromethane	ug/L	ND	8	ND	10	2607609
cis-1,2-Dichloroethylene	ug/L	ND	2	ND	3	2607609
cis-1,3-Dichloropropene	ug/L	ND	2	ND	3	2607609
Dibromochloromethane	ug/L	ND	1	ND	1	2607609
Ethylbenzene	ug/L	ND	1	ND	1	2607609
Ethylene Dibromide	ug/L	ND	1	ND	1	2607609
Methylene Chloride(Dichloromethane)	ug/L	ND	3	ND	4	2607609
o-Xylene	ug/L	ND	1	ND	1	2607609
p+m-Xylene	ug/L	ND	2	ND	3	2607609
Styrene	ug/L	ND	1	ND	1	2607609
Tetrachloroethylene	ug/L	ND	1	ND	1	2607609
Toluene	ug/L	ND	1	ND	1	2607609

ND = Not detected
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QC Batch = Quality Control Batch

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CBCL Limited
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Site Location: LANDFILL

VOLATILE ORGANICS BY GC/MS (LEACHATE)

Maxxam ID		KU3629		KU3797		
Sampling Date		2011/09/02		2011/09/02		
COC Number		06801		06801		
	Units	**PLCS**	**RDL**	**SLCS**	**RDL**	**QC Batch**
trans-1,2-Dichloroethylene	ug/L	ND	2	ND	3	2607609
trans-1,3-Dichloropropene	ug/L	ND	1	ND	1	2607609
Trichloroethylene	ug/L	ND	1	ND	1	2607609
Trichlorofluoromethane (FREON 11)	ug/L	ND	8	ND	10	2607609
Vinyl Chloride	ug/L	ND	0.5	ND	0.7	2607609
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	99		99 (1)		2607609
D4-1,2-Dichloroethane	%	100		101		2607609
D8-Toluene	%	99		100		2607609

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC analysis performed on previously opened vial. Analytical data not bracketed by acceptable QC due to instrument malfunction. Insufficient sample to repeat.

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Client Project #: 115080.00
Site Location: LANDFILL

POLYCHLORINATED BIPHENYLS BY GC-ECD (LEACHATE)

Maxxam ID		KU3629	KU3797		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06801		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	ND	ND	0.05	2610696
Surrogate Recovery (%)					
Decachlorobiphenyl	%	71	79		2610696

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

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Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

RESULTS OF ANALYSES OF WATER

Maxxam ID		KU3798			KU3816			KU3818		
Sampling Date		2011/09/02			2011/09/02			2011/09/02		
COC Number		06801			06801			06801		
	Units	**SURFACE -UP**	**RDL**	**QC Batch**	**SURFACE -DOWN**	**RDL**	**QC Batch**	**MW93-1**	**RDL**	**QC Batch**
Calculated Parameters										
Anion Sum	me/L	0.680	N/A	2605954	3.80	N/A	2605954	7.47	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	17	1	2605950	159	1	2605950	304	1	2605950
Calculated TDS	mg/L	63	1	2605960	204	1	2605960	389	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	1	2605950	ND	1	2605950	4	1	2605950
Cation Sum	me/L	1.45	N/A	2605954	3.85	N/A	2605954	6.90	N/A	2605954
Hardness (CaCO3)	mg/L	29	1	2605952	170	1	2605952	180	1	2605952
Ion Balance (% Difference)	%	36.2	N/A	2605953	0.650	N/A	2605953	3.97	N/A	2605953
Langelier Index (@ 20C)	N/A	-3.19		2605958	0.248		2605958	0.798		2605958
Langelier Index (@ 4C)	N/A	-3.44		2605959	-0.00200		2605959	0.550		2605959
Nitrate (N)	mg/L	ND	0.05	2605955	1.6	0.05	2605955	ND	0.05	2605955
Saturation pH (@ 20C)	N/A	9.18		2605958	7.39		2605958	7.32		2605958
Saturation pH (@ 4C)	N/A	9.43		2605959	7.64		2605959	7.57		2605959
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	17	5	2613145	160	30	2613145	310	30	2613145
Dissolved Chloride (Cl)	mg/L	7	1	2613147	8	1	2613147	11	1	2613147
Colour	TCU	140	30	2613151	32	5	2613151	ND	5	2613151
Nitrate + Nitrite	mg/L	ND	0.05	2613154	1.6	0.05	2613154	ND	0.05	2613154
Nitrite (N)	mg/L	ND	0.01	2613155	ND	0.01	2613155	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	2613410	ND	0.05	2613410	ND	0.05	2613419
Total Organic Carbon (C)	mg/L	41	5	2614171	2.8	0.5	2614171	930	50	2614171
Orthophosphate (P)	mg/L	ND	0.01	2613153	ND	0.01	2613153	ND	0.01	2613153
pH	pH	5.99	N/A	2610932	7.64	N/A	2611762	8.12	N/A	2611762
Reactive Silica (SiO2)	mg/L	3.5	0.5	2613150	1.8	0.5	2613150	6.9	0.5	2613150
Total Suspended Solids	mg/L	840	100	2607211	160	5	2607211	810	5	2607211
Dissolved Sulphate (SO4)	mg/L	7	2	2613149	12	2	2613149	48	10	2613149
Turbidity	NTU	30	0.1	2613427	5.6	0.1	2613427	>1000	10	2613427
Conductivity	uS/cm	72	1	2610933	340	1	2611764	630	1	2611764

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

Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

RESULTS OF ANALYSES OF WATER

Maxxam ID		KU3841		KU3842		KU3843		KU3844		
Sampling Date		2011/09/02		2011/09/02		2011/09/02		2011/09/02		
COC Number		06801		06801		06801		06801		
	Units	**MW93-1A**	**RDL**	**MW93-2**	**RDL**	**MW93-2A**	**RDL**	**MW10-1**	**RDL**	**QC Batch**
Calculated Parameters										
Anion Sum	me/L	5.61	N/A	6.42	N/A	2.42	N/A	3.48	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	216	1	210	1	61	1	144	1	2605950
Calculated TDS	mg/L	302	1	361	1	145	1	185	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	3	1	2	1	ND	1	ND	1	2605950
Cation Sum	me/L	5.35	N/A	6.10	N/A	2.09	N/A	3.27	N/A	2605954
Hardness (CaCO3)	mg/L	120	1	260	1	73	1	150	1	2605952
Ion Balance (% Difference)	%	2.37	N/A	2.56	N/A	7.32	N/A	3.11	N/A	2605953
Langelier Index (@ 20C)	N/A	0.554		0.675		-1.21		0.336		2605958
Langelier Index (@ 4C)	N/A	0.305		0.426		-1.46		0.0860		2605959
Nitrate (N)	mg/L	ND	0.05	ND	0.05	ND	0.05	0.09	0.05	2605955
Saturation pH (@ 20C)	N/A	7.67		7.23		8.27		7.51		2605958
Saturation pH (@ 4C)	N/A	7.92		7.47		8.52		7.76		2605959
Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	220	30	210	30	61	5	140	30	2613145
Dissolved Chloride (Cl)	mg/L	16	1	20	1	16	1	6	1	2613147
Colour	TCU	ND	5	ND	5	120	30	9	5	2613151
Nitrate + Nitrite	mg/L	ND	0.05	ND	0.05	ND	0.05	0.09	0.05	2613154
Nitrite (N)	mg/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.05	ND	0.05	0.25	0.05	0.28	0.05	2613419
Total Organic Carbon (C)	mg/L	ND	0.5	1.0	0.5	17	5	18	5	2614171
Orthophosphate (P)	mg/L	ND	0.01	ND	0.01	ND	0.01	ND	0.01	2613153
pH	pH	8.22	N/A	7.90	N/A	7.06	N/A	7.85	N/A	2611762
Reactive Silica (SiO2)	mg/L	7.7	0.5	19	0.5	11	0.5	8.0	0.5	2613150
Total Suspended Solids	mg/L	11	1	19	1	330	20	400	10	2607211
Dissolved Sulphate (SO4)	mg/L	38	2	78	10	36	2	20	2	2613149
Turbidity	NTU	1.1	0.1	3.9	0.1	190	1	320	1	2613430
Conductivity	uS/cm	500	1	570	1	230	1	320	1	2611764

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RESULTS OF ANALYSES OF WATER

Maxxam ID		KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02		
COC Number		06801	06802		
	Units	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Calculated Parameters					
Anion Sum	me/L	1.57	1.59	N/A	2605954
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	50	51	1	2605950
Calculated TDS	mg/L	95	95	1	2605960
Carb. Alkalinity (calc. as CaCO3)	mg/L	ND	ND	1	2605950
Cation Sum	me/L	1.43	1.44	N/A	2605954
Hardness (CaCO3)	mg/L	61	61	1	2605952
Ion Balance (% Difference)	%	4.67	4.95	N/A	2605953
Langelier Index (@ 20C)	N/A	-1.18	-1.11		2605958
Langelier Index (@ 4C)	N/A	-1.43	-1.36		2605959
Nitrate (N)	mg/L	0.11	0.08	0.05	2605955
Saturation pH (@ 20C)	N/A	8.32	8.31		2605958
Saturation pH (@ 4C)	N/A	8.57	8.56		2605959
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	51	51	5	2613145
Dissolved Chloride (Cl)	mg/L	3	3	1	2613147
Colour	TCU	22	18	5	2613151
Nitrate + Nitrite	mg/L	0.11	0.08	0.05	2613154
Nitrite (N)	mg/L	ND	ND	0.01	2613155
Nitrogen (Ammonia Nitrogen)	mg/L	ND	ND	0.05	2613419
Total Organic Carbon (C)	mg/L	15	18	0.5	2614171
Orthophosphate (P)	mg/L	ND	ND	0.01	2613153
pH	pH	7.14	7.20	N/A	2611762
Reactive Silica (SiO2)	mg/L	10	10	0.5	2613150
Total Suspended Solids	mg/L	7000	9400	200	2607211
Dissolved Sulphate (SO4)	mg/L	22	22	2	2613149
Turbidity	NTU	>1000	>1000	10	2613430
Conductivity	uS/cm	150	150	1	2611764

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

Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

MERCURY BY COLD VAPOUR AA (WATER)

Maxxam ID		KU3798	KU3816	KU3818	KU3841	KU3842		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**SURFACE -UP**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**MW93-2**	**RDL**	**QC Batch**
Metals								
Total Mercury (Hg)	ug/L	0.023	ND	ND	0.035	0.015	0.013	2610669

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

Maxxam ID		KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06802		
	Units	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Metals							
Total Mercury (Hg)	ug/L	ND	ND	0.092	0.099	0.013	2613377

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ELEMENTS BY ICP/MS (WATER)

Maxxam ID		KU3798	KU3816	KU3818	KU3841	KU3842		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**SURFACE -UP**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**MW93-2**	**RDL**	**QC Batch**
Metals								
Dissolved Aluminum (Al)	ug/L			73.7	5.9	ND	5.0	2607495
Total Aluminum (Al)	ug/L	1140	941				5.0	2607299
Dissolved Antimony (Sb)	ug/L			ND	ND	ND	1.0	2607495
Total Antimony (Sb)	ug/L	ND	ND				1.0	2607299
Dissolved Arsenic (As)	ug/L			ND	ND	1.2	1.0	2607495
Total Arsenic (As)	ug/L	2.5	2.5				1.0	2607299
Dissolved Barium (Ba)	ug/L			77.9	68.6	171	1.0	2607495
Total Barium (Ba)	ug/L	132	179				1.0	2607299
Dissolved Beryllium (Be)	ug/L			ND	ND	ND	1.0	2607495
Total Beryllium (Be)	ug/L	ND	ND				1.0	2607299
Dissolved Bismuth (Bi)	ug/L			ND	ND	ND	2.0	2607495
Total Bismuth (Bi)	ug/L	ND	ND				2.0	2607299
Dissolved Boron (B)	ug/L			63	96	1160	50	2607495
Total Boron (B)	ug/L	ND	ND				50	2607299
Dissolved Cadmium (Cd)	ug/L			ND	ND	0.038	0.017	2607495
Total Cadmium (Cd)	ug/L	0.066	0.035				0.017	2607299
Dissolved Calcium (Ca)	ug/L			43500	26300	77300	100	2607495
Total Calcium (Ca)	ug/L	8230	62300				100	2607299
Dissolved Chromium (Cr)	ug/L			ND	ND	ND	1.0	2607495
Total Chromium (Cr)	ug/L	2.3	163				1.0	2607299
Dissolved Cobalt (Co)	ug/L			0.44	ND	0.56	0.40	2607495
Total Cobalt (Co)	ug/L	1.90	1.98				0.40	2607299
Dissolved Copper (Cu)	ug/L			ND	ND	ND	2.0	2607495
Total Copper (Cu)	ug/L	5.3	3.0				2.0	2607299
Dissolved Iron (Fe)	ug/L			65	ND	ND	50	2607495
Total Iron (Fe)	ug/L	16700	4130				50	2607299
Dissolved Lead (Pb)	ug/L			ND	ND	ND	0.50	2607495
Total Lead (Pb)	ug/L	2.16	0.69				0.50	2607299
Dissolved Magnesium (Mg)	ug/L			16400	12200	15600	100	2607495
Total Magnesium (Mg)	ug/L	1960	3830				100	2607299

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

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CBCL Limited
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Site Location: LANDFILL

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		KU3798	KU3816	KU3818	KU3841	KU3842		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**SURFACE -UP**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**MW93-2**	**RDL**	**QC Batch**
Dissolved Manganese (Mn)	ug/L			60.0	259	1120	2.0	2607495
Total Manganese (Mn)	ug/L	1460	1760				2.0	2607299
Dissolved Molybdenum (Mo)	ug/L			16.3	19.2	ND	2.0	2607495
Total Molybdenum (Mo)	ug/L	ND	ND				2.0	2607299
Dissolved Nickel (Ni)	ug/L			ND	ND	ND	2.0	2607495
Total Nickel (Ni)	ug/L	4.8	ND				2.0	2607299
Dissolved Potassium (K)	ug/L			2680	1830	1560	100	2607495
Total Potassium (K)	ug/L	2620	1030				100	2607299
Dissolved Selenium (Se)	ug/L			ND	ND	ND	1.0	2607495
Total Selenium (Se)	ug/L	ND	ND				1.0	2607299
Dissolved Silver (Ag)	ug/L			ND	ND	ND	0.10	2607495
Total Silver (Ag)	ug/L	ND	ND				0.10	2607299
Dissolved Sodium (Na)	ug/L			76100	68600	21000	100	2607495
Total Sodium (Na)	ug/L	4980	5820				100	2607299
Dissolved Strontium (Sr)	ug/L			263	192	210	2.0	2607495
Total Strontium (Sr)	ug/L	35.5	110				2.0	2607299
Dissolved Thallium (Tl)	ug/L			ND	ND	ND	0.10	2607495
Total Thallium (Tl)	ug/L	ND	ND				0.10	2607299
Dissolved Tin (Sn)	ug/L			ND	ND	ND	2.0	2607495
Total Tin (Sn)	ug/L	ND	ND				2.0	2607299
Dissolved Titanium (Ti)	ug/L			2.6	ND	ND	2.0	2607495
Total Titanium (Ti)	ug/L	35.2	37.2				2.0	2607299
Dissolved Uranium (U)	ug/L			3.06	0.40	0.24	0.10	2607495
Total Uranium (U)	ug/L	ND	0.35				0.10	2607299
Dissolved Vanadium (V)	ug/L			ND	ND	ND	2.0	2607495
Total Vanadium (V)	ug/L	19.9	2.8				2.0	2607299
Dissolved Zinc (Zn)	ug/L			ND	ND	5.0	5.0	2607495
Total Zinc (Zn)	ug/L	28.1	12.4				5.0	2607299

ND = Not detected
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QC Batch = Quality Control Batch

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CBCL Limited
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Site Location: LANDFILL

ELEMENTS BY ICP/MS (WATER)

Maxxam ID		KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06802		
	Units	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Metals							
Dissolved Aluminum (Al)	ug/L	86.6	41.8	74.5	68.3	5.0	2607495
Dissolved Antimony (Sb)	ug/L	ND	ND	ND	ND	1.0	2607495
Dissolved Arsenic (As)	ug/L	ND	ND	ND	ND	1.0	2607495
Dissolved Barium (Ba)	ug/L	54.1	50.2	28.8	29.4	1.0	2607495
Dissolved Beryllium (Be)	ug/L	ND	ND	ND	ND	1.0	2607495
Dissolved Bismuth (Bi)	ug/L	ND	ND	ND	ND	2.0	2607495
Dissolved Boron (B)	ug/L	317	ND	ND	ND	50	2607495
Dissolved Cadmium (Cd)	ug/L	0.304	0.032	0.039	0.036	0.017	2607495
Dissolved Calcium (Ca)	ug/L	20600	51100	20600	20800	100	2607495
Dissolved Chromium (Cr)	ug/L	ND	ND	ND	ND	1.0	2607495
Dissolved Cobalt (Co)	ug/L	1.19	4.91	1.54	2.07	0.40	2607495
Dissolved Copper (Cu)	ug/L	ND	7.3	9.4	9.1	2.0	2607495
Dissolved Iron (Fe)	ug/L	3000	50	96	92	50	2607495
Dissolved Lead (Pb)	ug/L	1.17	ND	ND	2.66	0.50	2607495
Dissolved Magnesium (Mg)	ug/L	5220	4540	2190	2150	100	2607495
Dissolved Manganese (Mn)	ug/L	4190	239	106	139	2.0	2607495
Dissolved Molybdenum (Mo)	ug/L	ND	2.5	8.5	6.1	2.0	2607495
Dissolved Nickel (Ni)	ug/L	ND	6.5	8.9	8.3	2.0	2607495
Dissolved Potassium (K)	ug/L	1040	1360	714	693	100	2607495
Dissolved Selenium (Se)	ug/L	ND	ND	ND	ND	1.0	2607495
Dissolved Silver (Ag)	ug/L	ND	ND	ND	ND	0.10	2607495
Dissolved Sodium (Na)	ug/L	11000	6570	4670	4600	100	2607495
Dissolved Strontium (Sr)	ug/L	70.6	106	46.9	45.4	2.0	2607495
Dissolved Thallium (Tl)	ug/L	ND	ND	ND	ND	0.10	2607495
Dissolved Tin (Sn)	ug/L	ND	ND	ND	ND	2.0	2607495
Dissolved Titanium (Ti)	ug/L	ND	ND	2.1	ND	2.0	2607495
Dissolved Uranium (U)	ug/L	ND	0.43	ND	ND	0.10	2607495
Dissolved Vanadium (V)	ug/L	ND	ND	ND	ND	2.0	2607495
Dissolved Zinc (Zn)	ug/L	568	9.0	8.9	10.1	5.0	2607495

ND = Not detected
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QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		KU3798		KU3816	KU3818	KU3841		
Sampling Date		2011/09/02		2011/09/02	2011/09/02	2011/09/02		
COC Number		06801		06801	06801	06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**RDL**	**QC Batch**
Chlorobenzenes								
1,2-Dichlorobenzene	ug/L	ND	0.5	ND	ND	ND	0.7	2607609
1,3-Dichlorobenzene	ug/L	ND	1	ND	ND	ND	1	2607609
1,4-Dichlorobenzene	ug/L	ND	1	ND	ND	ND	1	2607609
Chlorobenzene	ug/L	ND	1	ND	ND	ND	1	2607609
Volatile Organics								
1,1,1-Trichloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,1,2,2-Tetrachloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,1,2-Trichloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,1-Dichloroethane	ug/L	ND	2	ND	ND	ND	3	2607609
1,1-Dichloroethylene	ug/L	ND	0.5	ND	ND	ND	0.7	2607609
1,2-Dichloroethane	ug/L	ND	1	ND	ND	ND	1	2607609
1,2-Dichloropropane	ug/L	ND	1	ND	ND	ND	1	2607609
Benzene	ug/L	ND	1	ND	ND	ND	1	2607609
Bromodichloromethane	ug/L	ND	1	ND	ND	ND	1	2607609
Bromoform	ug/L	ND	1	ND	ND	ND	1	2607609
Bromomethane	ug/L	ND	3	ND	ND	ND	4	2607609
Carbon Tetrachloride	ug/L	ND	1	ND	ND	ND	1	2607609
Chloroethane	ug/L	ND	8	ND	ND	ND	10	2607609
Chloroform	ug/L	ND	1	ND	ND	ND	1	2607609
Chloromethane	ug/L	ND	8	ND	ND	ND	10	2607609
cis-1,2-Dichloroethylene	ug/L	ND	2	ND	ND	ND	3	2607609
cis-1,3-Dichloropropene	ug/L	ND	2	ND	ND	ND	3	2607609
Dibromochloromethane	ug/L	ND	1	ND	ND	ND	1	2607609
Ethylbenzene	ug/L	ND	1	ND	ND	ND	1	2607609
Ethylene Dibromide	ug/L	ND	1	ND	ND	ND	1	2607609
Methylene Chloride(Dichloromethane)	ug/L	ND	3	ND	ND	ND	4	2607609
o-Xylene	ug/L	ND	1	ND	ND	ND	1	2607609
p+m-Xylene	ug/L	ND	2	ND	ND	ND	3	2607609
Styrene	ug/L	ND	1	ND	ND	ND	1	2607609
Tetrachloroethylene	ug/L	ND	1	ND	ND	ND	1	2607609

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

Maxxam Job #: B1D6608
Report Date: 2011/09/19

CBCL Limited
Client Project #: 115080.00
Site Location: LANDFILL

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		KU3798		KU3816	KU3818	KU3841		
Sampling Date		2011/09/02		2011/09/02	2011/09/02	2011/09/02		
COC Number		06801		06801	06801	06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**MW93-1A**	**RDL**	**QC Batch**
Toluene	ug/L	2	1	ND	ND	ND	1	2607609
trans-1,2-Dichloroethylene	ug/L	ND	2	ND	ND	ND	3	2607609
trans-1,3-Dichloropropene	ug/L	ND	1	ND	ND	ND	1	2607609
Trichloroethylene	ug/L	ND	1	ND	ND	ND	1	2607609
Trichlorofluoromethane (FREON 11)	ug/L	ND	8	ND	ND	ND	10	2607609
Vinyl Chloride	ug/L	ND	0.5	ND	ND	ND	0.7	2607609
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	99		101 (1)	98 (1)	99 (1)		2607609
D4-1,2-Dichloroethane	%	99		103	101	101		2607609
D8-Toluene	%	99		99	100	100		2607609

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC analysis performed on previously opened vial.

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Site Location: LANDFILL

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		KU3842	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
Chlorobenzenes								
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	0.7	2607609
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Chlorobenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Volatile Organics								
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	ND	3	2607609
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	0.7	2607609
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	ND	1	2607609
1,2-Dichloropropane	ug/L	ND	ND	2	7	7	1	2607609
Benzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Bromodichloromethane	ug/L	ND	ND	ND	ND	ND	1	2607609
Bromoform	ug/L	ND	ND	ND	ND	ND	1	2607609
Bromomethane	ug/L	ND	ND	ND	ND	ND	4	2607609
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	ND	1	2607609
Chloroethane	ug/L	ND	ND	ND	ND	ND	10	2607609
Chloroform	ug/L	ND	ND	ND	ND	ND	1	2607609
Chloromethane	ug/L	ND	ND	ND	ND	ND	10	2607609
cis-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	3	2607609
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	3	2607609
Dibromochloromethane	ug/L	ND	ND	ND	ND	ND	1	2607609
Ethylbenzene	ug/L	ND	ND	ND	ND	ND	1	2607609
Ethylene Dibromide	ug/L	ND	ND	ND	ND	ND	1	2607609
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	ND	4	2607609
o-Xylene	ug/L	ND	ND	ND	ND	ND	1	2607609
p+m-Xylene	ug/L	ND	ND	ND	ND	ND	3	2607609
Styrene	ug/L	ND	ND	ND	ND	ND	1	2607609
Tetrachloroethylene	ug/L	ND	ND	ND	ND	ND	1	2607609
Toluene	ug/L	ND	ND	ND	ND	ND	1	2607609

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

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		KU3842	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	ND	3	2607609
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	ND	1	2607609
Trichloroethylene	ug/L	ND	ND	ND	ND	ND	1	2607609
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	ND	ND	ND	10	2607609
Vinyl Chloride	ug/L	ND	ND	ND	ND	ND	0.7	2607609
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	101 (1)	100 (1)	99 (1)	97 (2)	97 (2)		2607609
D4-1,2-Dichloroethane	%	102	102	103	101	104		2607609
D8-Toluene	%	99	101	99	99	99		2607609

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) VOC analysis performed on previously opened vial.
(2) VOC analysis performed on previously opened vial. VOC sample contained sediment.

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POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		KU3798		KU3816	KU3818		KU3841		
Sampling Date		2011/09/02		2011/09/02	2011/09/02		2011/09/02		
COC Number		06801		06801	06801		06801		
	Units	**SURFACE -UP**	**RDL**	**SURFACE -DOWN**	**MW93-1**	**QC Batch**	**MW93-1A**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/L	ND	0.1	ND	ND	2610696	ND	0.05	2613278
Surrogate Recovery (%)									
Decachlorobiphenyl	%	42 (1)		66	36 (2)	2610696	73		2613278

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated PCB RDL due to matrix / co-extractive interference.
(2) PCB sample contained sediment.

Maxxam ID		KU3842	KU3843	KU3844	KU3845	KU3846		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06802		
	Units	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**DUP-A**	**RDL**	**QC Batch**
PCBs								
Total PCB	ug/L	ND	ND	ND	ND	ND	0.05	2613278
Surrogate Recovery (%)								
Decachlorobiphenyl	%	81	60	70 (1)	49 (1)	68 (1)		2613278

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) PCB sample contained sediment.

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Package 1	0.0°C

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

GENERAL COMMENTS

Sample KU3797-01: TOC: The detection limit was increased due to sample matrix.

Sample KU3798-01: RCAp Ion Balance acceptable. Low ionic strength sample.

Sample KU3843-01: TOC: The detection limit was increased due to turbidity.

Poor RCAp Ion Balance due to sample matrix. Possible loss of cations due to lab filtration.

Sample KU3844-01: TOC: The detection limit was increased due to turbidity.

Sample KU3845-01: TOC: The sample was decanted due to sediment content.

Sample KU3846-01: TOC: The sample was decanted due to the sediment content.

Results relate only to the items tested.

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607211	JHR	QC Standard	Total Suspended Solids	2011/09/08		98	%	80 - 120
		Method Blank	Total Suspended Solids	2011/09/08	ND, RDL=1		mg/L	
		RPD [KU3844-02]	Total Suspended Solids	2011/09/08	22.8		%	25
2607299	DLB	Matrix Spike	Total Aluminum (Al)	2011/09/08		104	%	80 - 120
			Total Antimony (Sb)	2011/09/08		102	%	80 - 120
			Total Arsenic (As)	2011/09/08		97	%	80 - 120
			Total Barium (Ba)	2011/09/08		97	%	80 - 120
			Total Beryllium (Be)	2011/09/08		96	%	80 - 120
			Total Bismuth (Bi)	2011/09/08		99	%	80 - 120
			Total Boron (B)	2011/09/08		98	%	80 - 120
			Total Cadmium (Cd)	2011/09/08		97	%	80 - 120
			Total Calcium (Ca)	2011/09/08		100	%	80 - 120
			Total Chromium (Cr)	2011/09/08		97	%	80 - 120
			Total Cobalt (Co)	2011/09/08		99	%	80 - 120
			Total Copper (Cu)	2011/09/08		98	%	80 - 120
			Total Iron (Fe)	2011/09/08		102	%	80 - 120
			Total Lead (Pb)	2011/09/08		98	%	80 - 120
			Total Magnesium (Mg)	2011/09/08		104	%	80 - 120
			Total Manganese (Mn)	2011/09/08		95	%	80 - 120
			Total Molybdenum (Mo)	2011/09/08		102	%	80 - 120
			Total Nickel (Ni)	2011/09/08		98	%	80 - 120
			Total Potassium (K)	2011/09/08		98	%	80 - 120
			Total Selenium (Se)	2011/09/08		97	%	80 - 120
			Total Silver (Ag)	2011/09/08		99	%	80 - 120
			Total Sodium (Na)	2011/09/08		97	%	80 - 120
			Total Strontium (Sr)	2011/09/08		97	%	80 - 120
			Total Thallium (Tl)	2011/09/08		100	%	80 - 120
			Total Tin (Sn)	2011/09/08		101	%	80 - 120
			Total Titanium (Ti)	2011/09/08		102	%	80 - 120
			Total Uranium (U)	2011/09/08		106	%	80 - 120
			Total Vanadium (V)	2011/09/08		98	%	80 - 120
			Total Zinc (Zn)	2011/09/08		98	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2011/09/08		103	%	80 - 120
			Total Antimony (Sb)	2011/09/08		97	%	80 - 120
			Total Arsenic (As)	2011/09/08		98	%	80 - 120
			Total Barium (Ba)	2011/09/08		97	%	80 - 120
			Total Beryllium (Be)	2011/09/08		101	%	80 - 120
			Total Bismuth (Bi)	2011/09/08		99	%	80 - 120
			Total Boron (B)	2011/09/08		102	%	80 - 120
			Total Cadmium (Cd)	2011/09/08		99	%	80 - 120
			Total Calcium (Ca)	2011/09/08		100	%	80 - 120
			Total Chromium (Cr)	2011/09/08		97	%	80 - 120
			Total Cobalt (Co)	2011/09/08		100	%	80 - 120
			Total Copper (Cu)	2011/09/08		99	%	80 - 120
			Total Iron (Fe)	2011/09/08		102	%	80 - 120
			Total Lead (Pb)	2011/09/08		98	%	80 - 120
			Total Magnesium (Mg)	2011/09/08		104	%	80 - 120
			Total Manganese (Mn)	2011/09/08		96	%	80 - 120
			Total Molybdenum (Mo)	2011/09/08		100	%	80 - 120
			Total Nickel (Ni)	2011/09/08		98	%	80 - 120
			Total Potassium (K)	2011/09/08		100	%	80 - 120
			Total Selenium (Se)	2011/09/08		100	%	80 - 120
			Total Silver (Ag)	2011/09/08		97	%	80 - 120
			Total Sodium (Na)	2011/09/08		97	%	80 - 120
			Total Strontium (Sr)	2011/09/08		96	%	80 - 120

CBCL Limited
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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607299	DLB	Spiked Blank	Total Thallium (Tl)	2011/09/08		99	%	80 - 120
			Total Tin (Sn)	2011/09/08		97	%	80 - 120
			Total Titanium (Ti)	2011/09/08		103	%	80 - 120
			Total Uranium (U)	2011/09/08		105	%	80 - 120
			Total Vanadium (V)	2011/09/08		98	%	80 - 120
			Total Zinc (Zn)	2011/09/08		98	%	80 - 120
		Method Blank	Total Aluminum (Al)	2011/09/08	9.7, RDL=5.0 (1)		ug/L	
			Total Antimony (Sb)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Bismuth (Bi)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Boron (B)	2011/09/08	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2011/09/08	ND, RDL=0.017		ug/L	
			Total Calcium (Ca)	2011/09/08	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2011/09/08	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Iron (Fe)	2011/09/08	ND, RDL=50		ug/L	
			Total Lead (Pb)	2011/09/08	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2011/09/08	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Potassium (K)	2011/09/08	ND, RDL=100		ug/L	
			Total Selenium (Se)	2011/09/08	ND, RDL=1.0		ug/L	
			Total Silver (Ag)	2011/09/08	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2011/09/08	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2011/09/08	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2011/09/08	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2011/09/08	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2011/09/08	ND, RDL=5.0		ug/L	
		RPD	Total Arsenic (As)	2011/09/08	NC		%	25
2607495	DLB	Matrix Spike [KU3818-02]						
			Dissolved Aluminum (Al)	2011/09/08		95	%	80 - 120
			Dissolved Antimony (Sb)	2011/09/08		99	%	80 - 120
			Dissolved Arsenic (As)	2011/09/08		96	%	80 - 120
			Dissolved Barium (Ba)	2011/09/08		NC	%	80 - 120
			Dissolved Beryllium (Be)	2011/09/08		99	%	80 - 120
			Dissolved Bismuth (Bi)	2011/09/08		92	%	80 - 120
			Dissolved Boron (B)	2011/09/08		96	%	80 - 120
			Dissolved Cadmium (Cd)	2011/09/08		99	%	80 - 120
			Dissolved Calcium (Ca)	2011/09/08		NC	%	80 - 120
			Dissolved Chromium (Cr)	2011/09/08		95	%	80 - 120
			Dissolved Cobalt (Co)	2011/09/08		94	%	80 - 120
			Dissolved Copper (Cu)	2011/09/08		93	%	80 - 120
			Dissolved Iron (Fe)	2011/09/08		97	%	80 - 120
			Dissolved Lead (Pb)	2011/09/08		94	%	80 - 120
			Dissolved Magnesium (Mg)	2011/09/08		NC	%	80 - 120
			Dissolved Manganese (Mn)	2011/09/08		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2011/09/08		NC	%	80 - 120
			Dissolved Nickel (Ni)	2011/09/08		93	%	80 - 120

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
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Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607495	DLB	Matrix Spike [KU3818-02]	Dissolved Potassium (K)	2011/09/08		96	%	80 - 120
			Dissolved Selenium (Se)	2011/09/08		98	%	80 - 120
			Dissolved Silver (Ag)	2011/09/08		86	%	80 - 120
			Dissolved Sodium (Na)	2011/09/08		NC	%	80 - 120
			Dissolved Strontium (Sr)	2011/09/08		NC	%	80 - 120
			Dissolved Thallium (Tl)	2011/09/08		92	%	80 - 120
			Dissolved Tin (Sn)	2011/09/08		98	%	80 - 120
			Dissolved Titanium (Ti)	2011/09/08		98	%	80 - 120
			Dissolved Uranium (U)	2011/09/08		101	%	80 - 120
			Dissolved Vanadium (V)	2011/09/08		98	%	80 - 120
			Dissolved Zinc (Zn)	2011/09/08		96	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2011/09/08		99	%	80 - 120
			Dissolved Antimony (Sb)	2011/09/08		94	%	80 - 120
			Dissolved Arsenic (As)	2011/09/08		96	%	80 - 120
			Dissolved Barium (Ba)	2011/09/08		99	%	80 - 120
			Dissolved Beryllium (Be)	2011/09/08		99	%	80 - 120
			Dissolved Bismuth (Bi)	2011/09/08		92	%	80 - 120
			Dissolved Boron (B)	2011/09/08		96	%	80 - 120
			Dissolved Cadmium (Cd)	2011/09/08		97	%	80 - 120
			Dissolved Calcium (Ca)	2011/09/08		98	%	80 - 120
			Dissolved Chromium (Cr)	2011/09/08		96	%	80 - 120
			Dissolved Cobalt (Co)	2011/09/08		96	%	80 - 120
			Dissolved Copper (Cu)	2011/09/08		95	%	80 - 120
			Dissolved Iron (Fe)	2011/09/08		100	%	80 - 120
			Dissolved Lead (Pb)	2011/09/08		96	%	80 - 120
			Dissolved Magnesium (Mg)	2011/09/08		102	%	80 - 120
			Dissolved Manganese (Mn)	2011/09/08		93	%	80 - 120
			Dissolved Molybdenum (Mo)	2011/09/08		96	%	80 - 120
			Dissolved Nickel (Ni)	2011/09/08		95	%	80 - 120
			Dissolved Potassium (K)	2011/09/08		98	%	80 - 120
			Dissolved Selenium (Se)	2011/09/08		98	%	80 - 120
			Dissolved Silver (Ag)	2011/09/08		101	%	80 - 120
			Dissolved Sodium (Na)	2011/09/08		95	%	80 - 120
			Dissolved Strontium (Sr)	2011/09/08		92	%	80 - 120
			Dissolved Thallium (Tl)	2011/09/08		93	%	80 - 120
			Dissolved Tin (Sn)	2011/09/08		94	%	80 - 120
			Dissolved Titanium (Ti)	2011/09/08		100	%	80 - 120
			Dissolved Uranium (U)	2011/09/08		101	%	80 - 120
			Dissolved Vanadium (V)	2011/09/08		97	%	80 - 120
			Dissolved Zinc (Zn)	2011/09/08		97	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2011/09/08	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Bismuth (Bi)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2011/09/08	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2011/09/08	ND, RDL=0.017		ug/L	
			Dissolved Calcium (Ca)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2011/09/08	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Iron (Fe)	2011/09/08	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2011/09/08	ND, RDL=0.50		ug/L	

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607495	DLB	Method Blank	Dissolved Magnesium (Mg)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Potassium (K)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2011/09/08	ND, RDL=1.0		ug/L	
			Dissolved Silver (Ag)	2011/09/08	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2011/09/08	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2011/09/08	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2011/09/08	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2011/09/08	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2011/09/08	ND, RDL=5.0		ug/L	
		RPD [KU3841-02]	Dissolved Aluminum (Al)	2011/09/08	NC		%	25
			Dissolved Antimony (Sb)	2011/09/08	NC		%	25
			Dissolved Arsenic (As)	2011/09/08	NC		%	25
			Dissolved Barium (Ba)	2011/09/08	1.4		%	25
			Dissolved Beryllium (Be)	2011/09/08	NC		%	25
			Dissolved Bismuth (Bi)	2011/09/08	NC		%	25
			Dissolved Boron (B)	2011/09/08	NC		%	25
			Dissolved Cadmium (Cd)	2011/09/08	NC		%	25
			Dissolved Calcium (Ca)	2011/09/08	2.7		%	25
			Dissolved Chromium (Cr)	2011/09/08	NC		%	25
			Dissolved Cobalt (Co)	2011/09/08	NC		%	25
			Dissolved Copper (Cu)	2011/09/08	NC		%	25
			Dissolved Iron (Fe)	2011/09/08	NC		%	25
			Dissolved Lead (Pb)	2011/09/08	NC		%	25
			Dissolved Magnesium (Mg)	2011/09/08	1		%	25
			Dissolved Manganese (Mn)	2011/09/08	0.4		%	25
			Dissolved Molybdenum (Mo)	2011/09/08	2.0		%	25
			Dissolved Nickel (Ni)	2011/09/08	NC		%	25
			Dissolved Potassium (K)	2011/09/08	0.3		%	25
			Dissolved Selenium (Se)	2011/09/08	NC		%	25
			Dissolved Silver (Ag)	2011/09/08	NC		%	25
			Dissolved Sodium (Na)	2011/09/08	0.3		%	25
			Dissolved Strontium (Sr)	2011/09/08	1.0		%	25
			Dissolved Thallium (Tl)	2011/09/08	NC		%	25
			Dissolved Tin (Sn)	2011/09/08	NC		%	25
			Dissolved Titanium (Ti)	2011/09/08	NC		%	25
			Dissolved Uranium (U)	2011/09/08	NC		%	25
			Dissolved Vanadium (V)	2011/09/08	NC		%	25
			Dissolved Zinc (Zn)	2011/09/08	NC		%	25
2607609	ASL	Matrix Spike [KU3798-01]	1,2-Dichlorobenzene	2011/09/14		105	%	70 - 130
			1,3-Dichlorobenzene	2011/09/14		100	%	70 - 130
			1,4-Dichlorobenzene	2011/09/14		100	%	70 - 130
			Chlorobenzene	2011/09/14		111	%	70 - 130
			1,1,1-Trichloroethane	2011/09/14		100	%	70 - 130
			1,1,2,2-Tetrachloroethane	2011/09/14		111	%	70 - 130
			1,1,2-Trichloroethane	2011/09/14		111	%	70 - 130
			1,1-Dichloroethane	2011/09/14		100	%	70 - 130
			1,1-Dichloroethylene	2011/09/14		100	%	70 - 130
			1,2-Dichloroethane	2011/09/14		105	%	70 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607609	ASL	Matrix Spike [KU3798-01]	1,2-Dichloropropane	2011/09/14		105	%	70 - 130
			4-Bromofluorobenzene	2011/09/14		99	%	70 - 130
			Benzene	2011/09/14		107	%	70 - 130
			Bromodichloromethane	2011/09/14		95	%	70 - 130
			Bromoform	2011/09/14		79	%	70 - 130
			Bromomethane	2011/09/14		89	%	70 - 130
			Carbon Tetrachloride	2011/09/14		95	%	70 - 130
			Chloroethane	2011/09/14		100	%	70 - 130
			Chloroform	2011/09/14		105	%	70 - 130
			Chloromethane	2011/09/14		79	%	70 - 130
			cis-1,2-Dichloroethylene	2011/09/14		100	%	70 - 130
			cis-1,3-Dichloropropene	2011/09/14		89	%	70 - 130
			D4-1,2-Dichloroethane	2011/09/14		98	%	70 - 130
			D8-Toluene	2011/09/14		99	%	70 - 130
			Dibromochloromethane	2011/09/14		84	%	70 - 130
			Ethylbenzene	2011/09/14		105	%	70 - 130
			Ethylene Dibromide	2011/09/14		105	%	70 - 130
			Methylene Chloride(Dichloromethane)	2011/09/14		105	%	70 - 130
			o-Xylene	2011/09/14		110	%	70 - 130
			p+m-Xylene	2011/09/14		105	%	70 - 130
			Styrene	2011/09/14		85	%	70 - 130
			Tetrachloroethylene	2011/09/14		105	%	70 - 130
			Toluene	2011/09/14		105	%	70 - 130
			trans-1,2-Dichloroethylene	2011/09/14		105	%	70 - 130
			trans-1,3-Dichloropropene	2011/09/14		79	%	70 - 130
			Trichloroethylene	2011/09/14		109	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2011/09/14		100	%	70 - 130
			Vinyl Chloride	2011/09/14		84	%	70 - 130
		Spiked Blank	1,2-Dichlorobenzene	2011/09/14		113	%	70 - 130
			1,3-Dichlorobenzene	2011/09/14		108	%	70 - 130
			1,4-Dichlorobenzene	2011/09/14		109	%	70 - 130
			Chlorobenzene	2011/09/14		112	%	70 - 130
			1,1,1-Trichloroethane	2011/09/14		109	%	70 - 130
			1,1,2,2-Tetrachloroethane	2011/09/14		103	%	70 - 130
			1,1,2-Trichloroethane	2011/09/14		109	%	70 - 130
			1,1-Dichloroethane	2011/09/14		110	%	70 - 130
			1,1-Dichloroethylene	2011/09/14		115	%	70 - 130
			1,2-Dichloroethane	2011/09/14		109	%	70 - 130
			1,2-Dichloropropane	2011/09/14		107	%	70 - 130
			4-Bromofluorobenzene	2011/09/14		99	%	70 - 130
			Benzene	2011/09/14		110	%	70 - 130
			Bromodichloromethane	2011/09/14		95	%	70 - 130
			Bromoform	2011/09/14		77	%	70 - 130
			Bromomethane	2011/09/14		108	%	70 - 130
			Carbon Tetrachloride	2011/09/14		102	%	70 - 130
			Chloroethane	2011/09/14		108	%	70 - 130
			Chloroform	2011/09/14		111	%	70 - 130
			Chloromethane	2011/09/14		91	%	70 - 130
			cis-1,2-Dichloroethylene	2011/09/14		112	%	70 - 130
			cis-1,3-Dichloropropene	2011/09/14		93	%	70 - 130
			D4-1,2-Dichloroethane	2011/09/14		100	%	70 - 130
			D8-Toluene	2011/09/14		100	%	70 - 130
			Dibromochloromethane	2011/09/14		90	%	70 - 130
			Ethylbenzene	2011/09/14		111	%	70 - 130

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CBCL Limited
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Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607609 ASL	Spiked Blank	Ethylene Dibromide	2011/09/14		108	%	70 - 130
		Methylene Chloride(Dichloromethane)	2011/09/14		120	%	70 - 130
		o-Xylene	2011/09/14		114	%	70 - 130
		p+m-Xylene	2011/09/14		113	%	70 - 130
		Styrene	2011/09/14		111	%	70 - 130
		Tetrachloroethylene	2011/09/14		113	%	70 - 130
		Toluene	2011/09/14		111	%	70 - 130
		trans-1,2-Dichloroethylene	2011/09/14		112	%	70 - 130
		trans-1,3-Dichloropropene	2011/09/14		83	%	70 - 130
		Trichloroethylene	2011/09/14		112	%	70 - 130
		Trichlorofluoromethane (FREON 11)	2011/09/14		110	%	70 - 130
		Vinyl Chloride	2011/09/14		98	%	70 - 130
	Method Blank	1,2-Dichlorobenzene	2011/09/14	ND, RDL=0.5		ug/L	
		1,3-Dichlorobenzene	2011/09/14	ND, RDL=1		ug/L	
		1,4-Dichlorobenzene	2011/09/14	ND, RDL=1		ug/L	
		Chlorobenzene	2011/09/14	ND, RDL=1		ug/L	
		1,1,1-Trichloroethane	2011/09/14	ND, RDL=1		ug/L	
		1,1,2,2-Tetrachloroethane	2011/09/14	ND, RDL=1		ug/L	
		1,1,2-Trichloroethane	2011/09/14	ND, RDL=1		ug/L	
		1,1-Dichloroethane	2011/09/14	ND, RDL=2		ug/L	
		1,1-Dichloroethylene	2011/09/14	ND, RDL=0.5		ug/L	
		1,2-Dichloroethane	2011/09/14	ND, RDL=1		ug/L	
		1,2-Dichloropropane	2011/09/14	ND, RDL=1		ug/L	
		4-Bromofluorobenzene	2011/09/14		101	%	70 - 130
		Benzene	2011/09/14	ND, RDL=1		ug/L	
		Bromodichloromethane	2011/09/14	ND, RDL=1		ug/L	
		Bromoform	2011/09/14	ND, RDL=1		ug/L	
		Bromomethane	2011/09/14	ND, RDL=3		ug/L	
		Carbon Tetrachloride	2011/09/14	ND, RDL=1		ug/L	
		Chloroethane	2011/09/14	ND, RDL=8		ug/L	
		Chloroform	2011/09/14	ND, RDL=1		ug/L	
		Chloromethane	2011/09/14	ND, RDL=8		ug/L	
		cis-1,2-Dichloroethylene	2011/09/14	ND, RDL=2		ug/L	
		cis-1,3-Dichloropropene	2011/09/14	ND, RDL=2		ug/L	
		D4-1,2-Dichloroethane	2011/09/14		101	%	70 - 130
		D8-Toluene	2011/09/14		99	%	70 - 130
		Dibromochloromethane	2011/09/14	ND, RDL=1		ug/L	
		Ethylbenzene	2011/09/14	ND, RDL=1		ug/L	
		Ethylene Dibromide	2011/09/14	ND, RDL=1		ug/L	
		Methylene Chloride(Dichloromethane)	2011/09/14	ND, RDL=3		ug/L	
		o-Xylene	2011/09/14	ND, RDL=1		ug/L	
		p+m-Xylene	2011/09/14	ND, RDL=2		ug/L	
		Styrene	2011/09/14	ND, RDL=1		ug/L	
		Tetrachloroethylene	2011/09/14	ND, RDL=1		ug/L	
		Toluene	2011/09/14	ND, RDL=1		ug/L	
		trans-1,2-Dichloroethylene	2011/09/14	ND, RDL=2		ug/L	
		trans-1,3-Dichloropropene	2011/09/14	ND, RDL=1		ug/L	
		Trichloroethylene	2011/09/14	ND, RDL=1		ug/L	
		Trichlorofluoromethane (FREON 11)	2011/09/14	ND, RDL=8		ug/L	
		Vinyl Chloride	2011/09/14	ND, RDL=0.5		ug/L	
	RPD [KU3629-01]	1,2-Dichlorobenzene	2011/09/14	NC		%	40
		1,3-Dichlorobenzene	2011/09/14	NC		%	40
		1,4-Dichlorobenzene	2011/09/14	NC		%	40
		Chlorobenzene	2011/09/14	NC		%	40
		1,1,1-Trichloroethane	2011/09/14	NC		%	40

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2607609	ASL	RPD [KU3629-01]	1,1,2,2-Tetrachloroethane	2011/09/14	NC		%	40
			1,1,2-Trichloroethane	2011/09/14	NC		%	40
			1,1-Dichloroethane	2011/09/14	NC		%	40
			1,1-Dichloroethylene	2011/09/14	NC		%	40
			1,2-Dichloroethane	2011/09/14	NC		%	40
			1,2-Dichloropropane	2011/09/14	NC		%	40
			Benzene	2011/09/14	NC		%	40
			Bromodichloromethane	2011/09/14	NC		%	40
			Bromoform	2011/09/14	NC		%	40
			Bromomethane	2011/09/14	NC		%	40
			Carbon Tetrachloride	2011/09/14	NC		%	40
			Chloroethane	2011/09/14	NC		%	40
			Chloroform	2011/09/14	NC		%	40
			Chloromethane	2011/09/14	NC		%	40
			cis-1,2-Dichloroethylene	2011/09/14	NC		%	40
			cis-1,3-Dichloropropene	2011/09/14	NC		%	40
			Dibromochloromethane	2011/09/14	NC		%	40
			Ethylbenzene	2011/09/14	NC		%	40
			Ethylene Dibromide	2011/09/14	NC		%	40
			Methylene Chloride(Dichloromethane)	2011/09/14	NC		%	40
			o-Xylene	2011/09/14	NC		%	40
			p+m-Xylene	2011/09/14	NC		%	40
			Styrene	2011/09/14	NC		%	40
			Tetrachloroethylene	2011/09/14	NC		%	40
			Toluene	2011/09/14	NC		%	40
			trans-1,2-Dichloroethylene	2011/09/14	NC		%	40
			trans-1,3-Dichloropropene	2011/09/14	NC		%	40
			Trichloroethylene	2011/09/14	NC		%	40
			Trichlorofluoromethane (FREON 11)	2011/09/14	NC		%	40
			Vinyl Chloride	2011/09/14	NC		%	40
2607645	XQI	Matrix Spike	Sulphide	2011/09/09		90	%	80 - 120
		Spiked Blank	Sulphide	2011/09/09		97	%	80 - 120
		Method Blank	Sulphide	2011/09/09	ND, RDL=0.02		mg/L	
		RPD	Sulphide	2011/09/09	NC		%	20
2610669	JRC	Matrix Spike	Total Mercury (Hg)	2011/09/12		113	%	80 - 120
		QC Standard	Total Mercury (Hg)	2011/09/12		105	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2011/09/12		108	%	80 - 120
		Method Blank	Total Mercury (Hg)	2011/09/12	ND, RDL=0.013		ug/L	
		RPD	Total Mercury (Hg)	2011/09/12	NC		%	25
2610696	KJO	Matrix Spike	Decachlorobiphenyl	2011/09/14		80	%	30 - 130
			Total PCB	2011/09/14		79	%	70 - 130
		Spiked Blank	Decachlorobiphenyl	2011/09/14		84	%	30 - 130
			Total PCB	2011/09/14		97	%	70 - 130
		Method Blank	Decachlorobiphenyl	2011/09/14		86	%	30 - 130
			Total PCB	2011/09/14	ND, RDL=0.05		ug/L	
		RPD	Total PCB	2011/09/14	NC		%	40
2610932	MJL	QC Standard	pH	2011/09/13		102	%	80 - 120
		RPD [KU3798-02]	pH	2011/09/13	0		%	25
2610933	MJL	Spiked Blank	Conductivity	2011/09/12		100	%	80 - 120
		Method Blank	Conductivity	2011/09/12	ND, RDL=1		uS/cm	
		RPD [KU3798-02]	Conductivity	2011/09/12	0.7		%	25
2611762	MJL	QC Standard	pH	2011/09/13		100	%	80 - 120
		RPD	pH	2011/09/13	0.7		%	25
2611764	MJL	Spiked Blank	Conductivity	2011/09/13		99	%	80 - 120
		Method Blank	Conductivity	2011/09/13	1, RDL=1		uS/cm	

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2611764	MJL	RPD	Conductivity	2011/09/13	0.6		%	25
2613145	MCN	Matrix Spike	Total Alkalinity (Total as CaCO3)	2011/09/14		NC	%	80 - 120
		QC Standard	Total Alkalinity (Total as CaCO3)	2011/09/14		106	%	80 - 120
		Spiked Blank	Total Alkalinity (Total as CaCO3)	2011/09/14		101	%	80 - 120
		Method Blank	Total Alkalinity (Total as CaCO3)	2011/09/14	ND, RDL=5		mg/L	
		RPD	Total Alkalinity (Total as CaCO3)	2011/09/14	1.8		%	25
2613147	ARS	Matrix Spike	Dissolved Chloride (Cl)	2011/09/15		95	%	80 - 120
		QC Standard	Dissolved Chloride (Cl)	2011/09/15		98	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2011/09/15		101	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2011/09/15	ND, RDL=1		mg/L	
		RPD	Dissolved Chloride (Cl)	2011/09/15	1.4		%	25
2613149	SMT	Matrix Spike	Dissolved Sulphate (SO4)	2011/09/15		106	%	80 - 120
		QC Standard	Dissolved Sulphate (SO4)	2011/09/15		105	%	N/A
		Spiked Blank	Dissolved Sulphate (SO4)	2011/09/15		103	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2011/09/15	ND, RDL=2		mg/L	
		RPD	Dissolved Sulphate (SO4)	2011/09/15	NC		%	25
2613150	ABU	Matrix Spike	Reactive Silica (SiO2)	2011/09/14		NC	%	80 - 120
		QC Standard	Reactive Silica (SiO2)	2011/09/14		102	%	75 - 125
		Spiked Blank	Reactive Silica (SiO2)	2011/09/14		101	%	80 - 120
		Method Blank	Reactive Silica (SiO2)	2011/09/14	ND, RDL=0.5		mg/L	
		RPD	Reactive Silica (SiO2)	2011/09/14	0.6		%	25
2613151	SMT	QC Standard	Colour	2011/09/15		107	%	80 - 120
		Method Blank	Colour	2011/09/15	ND, RDL=5		TCU	
		RPD	Colour	2011/09/15	NC		%	25
2613153	ARS	Matrix Spike	Orthophosphate (P)	2011/09/15		104	%	80 - 120
		QC Standard	Orthophosphate (P)	2011/09/15		105	%	80 - 120
		Spiked Blank	Orthophosphate (P)	2011/09/15		109	%	80 - 120
		Method Blank	Orthophosphate (P)	2011/09/15	ND, RDL=0.01		mg/L	
		RPD	Orthophosphate (P)	2011/09/15	NC		%	25
2613154	ARS	Matrix Spike	Nitrate + Nitrite	2011/09/15		103	%	80 - 120
		QC Standard	Nitrate + Nitrite	2011/09/15		102	%	80 - 120
		Spiked Blank	Nitrate + Nitrite	2011/09/15		102	%	80 - 120
		Method Blank	Nitrate + Nitrite	2011/09/15	ND, RDL=0.05		mg/L	
		RPD	Nitrate + Nitrite	2011/09/15	NC		%	25
2613155	SMT	Matrix Spike	Nitrite (N)	2011/09/15		98	%	80 - 120
		QC Standard	Nitrite (N)	2011/09/15		98	%	80 - 120
		Spiked Blank	Nitrite (N)	2011/09/15		96	%	80 - 120
		Method Blank	Nitrite (N)	2011/09/15	ND, RDL=0.01		mg/L	
		RPD	Nitrite (N)	2011/09/15	NC		%	25
2613278	KJO	Matrix Spike	Decachlorobiphenyl	2011/09/16		109	%	30 - 130
			Total PCB	2011/09/16		84	%	70 - 130
		Spiked Blank	Decachlorobiphenyl	2011/09/16		92	%	30 - 130
			Total PCB	2011/09/16		79	%	70 - 130
		Method Blank	Decachlorobiphenyl	2011/09/16		91	%	30 - 130
			Total PCB	2011/09/16	ND, RDL=0.05		ug/L	
		RPD	Total PCB	2011/09/16	NC		%	40
2613377	JRC	Matrix Spike						
		[KU3844-02]	Total Mercury (Hg)	2011/09/14		94	%	80 - 120
		QC Standard	Total Mercury (Hg)	2011/09/14		83	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2011/09/14		85	%	80 - 120
		Method Blank	Total Mercury (Hg)	2011/09/14	ND, RDL=0.013		ug/L	
		RPD [KU3843-02]	Total Mercury (Hg)	2011/09/14	NC		%	25
2613410	MCN	Matrix Spike						
		[KU3816-02]	Nitrogen (Ammonia Nitrogen)	2011/09/15		88	%	80 - 120
		QC Standard	Nitrogen (Ammonia Nitrogen)	2011/09/14		99	%	80 - 120

CBCL Limited
Attention: Kelly MacDougall
Client Project #: 115080.00
P.O. #:
Site Location: LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB1D6608

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2613410	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2011/09/14		97	%	80 - 120
		Method Blank	Nitrogen (Ammonia Nitrogen)	2011/09/14	ND, RDL=0.05		mg/L	
		RPD [KU3816-02]	Nitrogen (Ammonia Nitrogen)	2011/09/15	NC		%	25
2613419	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2011/09/15		NC	%	80 - 120
		QC Standard	Nitrogen (Ammonia Nitrogen)	2011/09/15		95	%	80 - 120
		Spiked Blank	Nitrogen (Ammonia Nitrogen)	2011/09/15		91	%	80 - 120
		Method Blank	Nitrogen (Ammonia Nitrogen)	2011/09/15	ND, RDL=0.05		mg/L	
		RPD	Nitrogen (Ammonia Nitrogen)	2011/09/15	6.1		%	25
2613427	MJL	QC Standard	Turbidity	2011/09/14		101	%	80 - 120
		Method Blank	Turbidity	2011/09/14	ND, RDL=0.1		NTU	
		RPD [KU3818-02]	Turbidity	2011/09/14	NC		%	25
2613430	MJL	QC Standard	Turbidity	2011/09/14		99	%	80 - 120
		Method Blank	Turbidity	2011/09/14	ND, RDL=0.1		NTU	
		RPD	Turbidity	2011/09/14	NC		%	25
2613900	SSI	Matrix Spike	Phenols-4AAP	2011/09/14		94	%	80 - 120
		QC Standard	Phenols-4AAP	2011/09/14		105	%	80 - 120
		Spiked Blank	Phenols-4AAP	2011/09/14		100	%	80 - 120
		Method Blank	Phenols-4AAP	2011/09/14	ND, RDL=0.001		mg/L	
		RPD	Phenols-4AAP	2011/09/14	5.3		%	25
2614171	CRA	Matrix Spike	Total Organic Carbon (C)	2011/09/14		99	%	80 - 120
		QC Standard	Total Organic Carbon (C)	2011/09/14		94	%	80 - 120
		Spiked Blank	Total Organic Carbon (C)	2011/09/14		104	%	80 - 120
		Method Blank	Total Organic Carbon (C)	2011/09/14	ND, RDL=0.5		mg/L	
		RPD	Total Organic Carbon (C)	2011/09/14	NC		%	25
2616418	SMT	Matrix Spike	Chromium (VI)	2011/09/16		99	%	80 - 120
		QC Standard	Chromium (VI)	2011/09/16		101	%	80 - 120
		Spiked Blank	Chromium (VI)	2011/09/16		99	%	80 - 120
		Method Blank	Chromium (VI)	2011/09/16	ND, RDL=0.001		mg/L	
		RPD	Chromium (VI)	2011/09/16	NC		%	25

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

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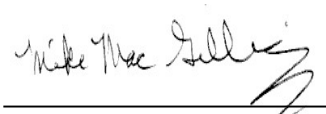
Validation Signature Page

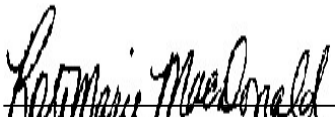
Maxxam Job #: B1D6608

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

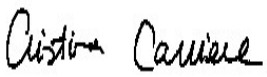


MIKE MACGILLIVRAY, Scientific Specialist (Inorganics)

KEVIN MACDONALD, Inorganics Supervisor



ROSE MACDONALD, Scientific Specialist (Organics)



CRISTINA CARRIERE, Scientific Services

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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.

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Your Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Your C.O.C. #: 06801

Attention: Kelly MacDougall
CBCL Limited
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2011/09/13

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B1D5825
Received: 2011/09/02, 16:45

Sample Matrix: Water
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
TEH in Water (PIRI)	9	2011/09/07	2011/09/09	ATL SOP 00198 R2	Based on Atl. PIRI
TEH in Water (PIRI)	2	2011/09/07	2011/09/13	ATL SOP 00198 R2	Based on Atl. PIRI
VPH in Water (PIRI)	10	2011/09/07	2011/09/08	ATL SOP 00200 R4	Based on Atl. PIRI
VPH in Water (PIRI)	1	2011/09/09	2011/09/09	ATL SOP 00200 R4	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	8	N/A	2011/09/09		Based on Atl. PIRI
ModTPH (T1) Calc. for Water	1	N/A	2011/09/12		Based on Atl. PIRI
ModTPH (T1) Calc. for Water	2	N/A	2011/09/13		Based on Atl. PIRI

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

Encryption Key

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

ROB WHELAN, Project Manager
Email: RWhelan@maxxam.ca
Phone# (709) 754-0203

==========

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Total cover pages: 1

Maxxam Job #: B1D5825
Report Date: 2011/09/13

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		KT8683	KT8684	KT8685	KT8686	KT8687		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**PLCS**	**SLCS**	**Surface-up**	**Surface-down**	**MW93-1**	**RDL**	**QC Batch**
Petroleum Hydrocarbons								
Benzene	mg/L	ND	ND	ND	ND	ND	0.001	2605964
Toluene	mg/L	ND	ND	0.002	ND	ND	0.001	2605964
Ethylbenzene	mg/L	ND	ND	ND	ND	ND	0.001	2605964
Xylene (Total)	mg/L	ND	ND	ND	ND	ND	0.002	2605964
C6 - C10 (less BTEX)	mg/L	ND	ND	ND	ND	ND	0.01	2605964
>C10-C16 Hydrocarbons	mg/L	0.05	0.05	ND	ND	ND	0.05	2606039
>C16-C21 Hydrocarbons	mg/L	ND	ND	ND	ND	ND	0.05	2606039
>C21-<C32 Hydrocarbons	mg/L	ND	ND	ND	ND	ND	0.1	2606039
Modified TPH (Tier1)	mg/L	ND	ND	ND	ND	ND	0.1	2604672
Reached Baseline at C32	mg/L	Yes	Yes	Yes	Yes	Yes	N/A	2606039
Hydrocarbon Resemblance	mg/L	SEECOMMENT (1)	SEECOMMENT (1)				N/A	2606039
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	146 (2)	104	116	112	109		2606039
n-Dotriacontane - Extractable	%	147 (3)	103	117 (4)	114 (5)	109 (5)		2606039
Isobutylbenzene - Volatile	%	88	87	85	84	85		2605964

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) No resemblance to petroleum products in fuel oil range.
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(3) Isobutylbenzene/n-Dotriacontane recovery(ies) not within acceptance limits. Analysis repeated with similar results.
(4) TEH sample decanted due to sediment.
(5) TEH sample contained sediment.

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Maxxam Job #: B1D5825
Report Date: 2011/09/13

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		KT8688	KT8689	KT8690	KT8691	KT8692		
Sampling Date		2011/09/02	2011/09/02	2011/09/02	2011/09/02	2011/09/02		
COC Number		06801	06801	06801	06801	06801		
	Units	**MW93-1A**	**MW93-2**	**MW93-2A**	**MW10-1**	**MW10-1A**	**RDL**	**QC Batch**
Petroleum Hydrocarbons								
Benzene	mg/L	ND	ND	ND	ND	ND	0.001	2605964
Toluene	mg/L	ND	ND	ND	ND	ND	0.001	2605964
Ethylbenzene	mg/L	ND	ND	ND	ND	ND	0.001	2605964
Xylene (Total)	mg/L	ND	ND	ND	ND	ND	0.002	2605964
C6 - C10 (less BTEX)	mg/L	ND	ND	ND	ND	ND	0.01	2605964
>C10-C16 Hydrocarbons	mg/L	ND	ND	ND	ND	ND	0.05	2606039
>C16-C21 Hydrocarbons	mg/L	ND	ND	ND	ND	ND	0.05	2606039
>C21-<C32 Hydrocarbons	mg/L	ND	ND	ND	0.4	ND	0.1	2606039
Modified TPH (Tier1)	mg/L	ND	ND	ND	0.4	ND	0.1	2604672
Reached Baseline at C32	mg/L	Yes	Yes	Yes	No	Yes	N/A	2606039
Hydrocarbon Resemblance	mg/L				SEECOMMENT (1)		N/A	2606039
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	101	106	104	101	110		2606039
n-Dotriacontane - Extractable	%	100	107	102 (2)	107 (2)	112 (2)		2606039
Isobutylbenzene - Volatile	%	83	80	83	84	84		2605964

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Possible lube oil fraction.
(2) TEH sample contained sediment.

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Maxxam Job #: B1D5825
Report Date: 2011/09/13

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		KT8693		
Sampling Date		2011/09/02		
COC Number		06801		
	Units	**Dup-A**	**RDL**	**QC Batch**
Petroleum Hydrocarbons				
Benzene	mg/L	ND	0.001	2608842
Toluene	mg/L	ND	0.001	2608842
Ethylbenzene	mg/L	ND	0.001	2608842
Xylene (Total)	mg/L	ND	0.002	2608842
C6 - C10 (less BTEX)	mg/L	ND	0.01	2608842
>C10-C16 Hydrocarbons	mg/L	ND	0.05	2606039
>C16-C21 Hydrocarbons	mg/L	ND	0.05	2606039
>C21-<C32 Hydrocarbons	mg/L	ND	0.1	2606039
Modified TPH (Tier1)	mg/L	ND	0.1	2604672
Reached Baseline at C32	mg/L	Yes	N/A	2606039
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	100		2606039
n-Dotriacontane - Extractable	%	99 (1)		2606039
Isobutylbenzene - Volatile	%	96		2608842

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) TEH sample contained sediment.

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Maxxam Job #: B1D5825
Report Date: 2011/09/13

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

CBCL Limited
Attention: Kelly MacDougall
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report

Maxxam Job Number: ZB1D5825

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2605964	DDE	Matrix Spike	Isobutylbenzene - Volatile	2011/09/08		79	%	70 - 130
			Benzene	2011/09/08		95	%	70 - 130
			Toluene	2011/09/08		95	%	70 - 130
			Ethylbenzene	2011/09/08		95	%	70 - 130
			Xylene (Total)	2011/09/08		97	%	70 - 130
		Spiked Blank	Isobutylbenzene - Volatile	2011/09/08		93	%	70 - 130
			Benzene	2011/09/08		100	%	70 - 130
			Toluene	2011/09/08		95	%	70 - 130
			Ethylbenzene	2011/09/08		95	%	70 - 130
			Xylene (Total)	2011/09/08		98	%	70 - 130
		Method Blank	Isobutylbenzene - Volatile	2011/09/08		100	%	70 - 130
			Benzene	2011/09/08	ND, RDL=0.001		mg/L	
			Toluene	2011/09/08	ND, RDL=0.001		mg/L	
			Ethylbenzene	2011/09/08	ND, RDL=0.001		mg/L	
			Xylene (Total)	2011/09/08	ND, RDL=0.002		mg/L	
			C6 - C10 (less BTEX)	2011/09/08	ND, RDL=0.01		mg/L	
		RPD	Benzene	2011/09/07	NC		%	40
			Toluene	2011/09/07	NC		%	40
			Ethylbenzene	2011/09/07	NC		%	40
			Xylene (Total)	2011/09/07	NC		%	40
			C6 - C10 (less BTEX)	2011/09/07	NC		%	40
2606039	SPI	Matrix Spike	Isobutylbenzene - Extractable	2011/09/09		106	%	30 - 130
			n-Dotriacontane - Extractable	2011/09/09		108	%	30 - 130
			>C10-C16 Hydrocarbons	2011/09/09		97	%	30 - 130
			>C16-C21 Hydrocarbons	2011/09/09		112	%	30 - 130
			>C21-<C32 Hydrocarbons	2011/09/09		93	%	30 - 130
		Spiked Blank	Isobutylbenzene - Extractable	2011/09/09		105	%	30 - 130
			n-Dotriacontane - Extractable	2011/09/09		107	%	30 - 130
			>C10-C16 Hydrocarbons	2011/09/09		97	%	30 - 130
			>C16-C21 Hydrocarbons	2011/09/09		113	%	30 - 130
			>C21-<C32 Hydrocarbons	2011/09/09		91	%	30 - 130
		Method Blank	Isobutylbenzene - Extractable	2011/09/09		102	%	30 - 130
			n-Dotriacontane - Extractable	2011/09/09		104	%	30 - 130
			>C10-C16 Hydrocarbons	2011/09/09	ND, RDL=0.05		mg/L	
			>C16-C21 Hydrocarbons	2011/09/09	ND, RDL=0.05		mg/L	
			>C21-<C32 Hydrocarbons	2011/09/09	ND, RDL=0.1		mg/L	
		RPD	>C10-C16 Hydrocarbons	2011/09/09	NC		%	40
			>C16-C21 Hydrocarbons	2011/09/09	NC		%	40
			>C21-<C32 Hydrocarbons	2011/09/09	NC		%	40
2608842	DDE	Matrix Spike	Isobutylbenzene - Volatile	2011/09/12		72	%	70 - 130
			Benzene	2011/09/12		85	%	70 - 130
			Toluene	2011/09/12		85	%	70 - 130
			Ethylbenzene	2011/09/12		85	%	70 - 130
			Xylene (Total)	2011/09/12		83	%	70 - 130
		Spiked Blank	Isobutylbenzene - Volatile	2011/09/12		107	%	70 - 130
			Benzene	2011/09/12		100	%	70 - 130
			Toluene	2011/09/12		100	%	70 - 130
			Ethylbenzene	2011/09/12		100	%	70 - 130
			Xylene (Total)	2011/09/12		102	%	70 - 130
		Method Blank	Isobutylbenzene - Volatile	2011/09/12		100	%	70 - 130
			Benzene	2011/09/12	ND, RDL=0.001		mg/L	
			Toluene	2011/09/12	ND, RDL=0.001		mg/L	
			Ethylbenzene	2011/09/12	ND, RDL=0.001		mg/L	
			Xylene (Total)	2011/09/12	ND, RDL=0.002		mg/L	
			C6 - C10 (less BTEX)	2011/09/12	ND, RDL=0.01		mg/L	

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CBCL Limited
Attention: Kelly MacDougall
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: ZB1D5825

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2608842	DDE	RPD	Benzene	2011/09/09	NC		%	40
			Toluene	2011/09/09	NC		%	40
			Ethylbenzene	2011/09/09	NC		%	40
			Xylene (Total)	2011/09/09	NC		%	40
			C6 - C10 (less BTEX)	2011/09/09	NC		%	40

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

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Validation Signature Page

Maxxam Job #: B1D5825

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

Paula Chaplin

PAULA CHAPLIN, Project Manager

==========

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.

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Maxxam Analytics Inc

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

CHAIN OF CUSTODY RECORD

06801

INVOICE INFORMATION:	
Company Name:	CBCL
Contact Name:	Kelly MacDougall
Address:	187 Kenmount Rd St. John's, NL
Email:	KMacdougall@cbcl.ca
Ph:	709-689-8401
Fax:	

REPORT INFORMATION (if differs from invoice):	
Company Name:	
Contact Name:	Same
Address:	
Email:	
Ph:	
Fax:	

PO #:	
Project #:	113080.00
Proj. Name:	Come By Chance
Location:	Landfill
Quotation#:	
Submitted By:	K. MacDougall
Site Task #:	

MAXXAM JOB NUMBER:	BID 5825
ENTERED BY, Init:	PMC
Client Code:	19037

Specify Guideline Requirements:
Please report phosphates as P_2O_5
Lab filtration & preservation is required for groundwater samples
Dissolved RCAp MS for GW samples

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

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

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury (Mercury is not included in soil or water metals scan)	Metals Soil: Available Metals Digest Default Method (HNO_3/H_2O_2)	Metals Soil: Total Digest - for sediments ($HNO_3/HF/HClO_4$)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	TPH MUST (BTEX, C_6-C_{32})	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
PLCS	leachate	Sept 2, 2011	2		✓		✓			✓						✓				✓	✓	✓	TSS, Chromium, total phenolics, sulphide
SLCS	leachate	Sept 2, 2011	2		✓		✓			✓						✓				✓	✓	✓	TSS, total phenolics, sulphide
Surface-up	SW	" "	12		✓		✓			✓						✓				✓	✓	✓	TSS
Surface-down	SW	" "	12		✓		✓			✓						✓				✓	✓	✓	TSS
MW93-1	GW	↓	↓		✓		✓			✓						✓				✓	✓	✓	TSS
MW93-1A	GW				✓		✓			✓						✓				—	✓	✓	TSS
MW93-2	GW				✓		✓			✓						✓				✓	✓	✓	TSS
MW93-2A	GW				✓		✓			✓						✓				✓	✓	✓	TSS
~~MW93~~ MW10-1	GW				✓		✓			✓						✓				✓	✓	✓	TSS
MW10-1A	GW				✓		✓			✓						✓				✓	✓	✓	TSS

RELINQUISHED BY: (Signature/Print)	RECEIVED BY: (Signature/Print)	DATE / TIME	PURPOSE OF CHANGE / REMARKS
Kelly MacDougall (signature) Kelly MacDougall	Duane Deeking (signature) Duane Deeking	2011/09/02 4:45	

TEMP @ Maxxam Receipt: 0°C

INTEGRITY Init: Yes No (circled)

KEENJVPOCOC St.John's 05/05

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CHAIN OF CUSTODY RECORD

06802

INVOICE INFORMATION:	REPORT INFORMATION (if differs from invoice):		MAXXAM JOB NUMBER:
Company Name: CBCL	Company Name:	PO #:	B1D5825
Contact Name: Kelly MacDougall	Contact Name:	Project #: 113080.00	
Address: 157 Kenmount Rd.	Address: Same	Proj. Name:	ENTERED BY, Init: PMC
Email: KmacdougallC@cbcl.ca	Email:	Location:	
Ph: Fax:	Ph: Fax:	Quotation#:	
		Submitted By:	
		Site Task #:	Client Code: 19037

Specify Guideline Requirements: Lab filtration + preservation req'd.

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

Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAp-30 Choose Total or Diss Metals	RCAp-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method)	Metals Water: Dissolved	Mercury is not included in soil or water metals scan	Metals Soil: Available Metals Digest Default Method (HNO_3/H_2O_2)	Metals Soil: Total Digest - for sediments ($HNO_3/HF/HClO_4$)	Metals Soil: Tin (required for CCME soils)	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	TPH MUST (BTEX, C_6-C_{32})	Soil (Potable), TPH MUST, NS Fuel Oil Spill Policy Low Level BTEX & C_6-C_{32}	NB Potable Water BTEX, VPH, Low Level TEH	TPH Fractionation	PAH's	PCB's	VOC's EPA 624,8260	Other Analysis or Comments/Hazards
DUP-A	GW	Sept 2	12		✓		✓			✓						✓			✓	✓	✓	TSS

DUE DATE:

STANDARD: ✓

RUSH Due Date: _____

For extra cost rush, specify Due Date. Rush analysis must be scheduled prior to sample submission.

Client will be contacted if Rush date cannot be met.

RELINQUISHED BY: (Signature/Print)	RECEIVED BY: (Signature/Print)	DATE / TIME	PURPOSE OF CHANGE / REMARKS	TEMP @ Maxxam Receipt
Kelly MacDougall	Duane Deering	2011/09/02		0°
Kelly MacDougall	Duane Deering	4:45		INTEGRITY Init: Yes No

KEENVROCOC St.John's 05/05

Stantec Consulting Ltd
Science Laboratory
422 Logy Bay Road
St. John's, NL A1A 5C6
Tel: (709) 576-4804
Fax: (709) 576-0008

Registered to ISO 9001:2000
ISO/IEC 17025:2005 Accredited
SCC-Food Scope (No. 268)
CALA – Environmental Scope (No. 2709)

Stantec

September 13, 2011
Project: 10885.
Lab Refer No.: B-2486-09

Report No.: 03975

CBCL
187 Kenmount Rd
St. John's, NL
A1B 3P9
Tel: (709) 364-8623
Fax: (709) 364-8627

Attention: Kelly MacDougall

Dear Ms. MacDougall

Reference: Toxicology Testing Results

Please find enclosed the results of the 96 hour bioassay conducted September 6 - 10, 2011. The toxicity test was performed on the PLCS sample. The effluent was collected on September 2, 2011. The sample was received in an acceptable condition.

Test conditions for a single concentration test were followed according to the Reference Method: For Determining Acute Lethality of Effluents to Rainbow Trout (Report EPS 1/RM/13 Second Edition-December 2000 and May 2007 amendment). All test parameters were maintained within the recommended levels outlined in the above protocol.

The PLCS effluent is not acutely lethal to the fish, since less than 50.00 % of the fish died in the 100.00 % effluent during the 96 hour period. The LT50 was determined to be greater than 96 hours.

Please call if you have any questions regarding these results.

Sincerely,

STANTEC CONSULTING LTD

Michelle Pye, B.Sc.
Toxicology Lead, Science Laboratory

Attachments:

A- Bench Data Sheet(s)

Reference: Toxicology Testing Results

SAMPLE

Lab Refer.No.:	B-2486-09
Company:	CBCL
Sample Material:	PLCS
Sampling Method:	Not provided
Sample Condition:	Received in acceptable condition
Collected:	September 2, 2011; 2:00 pm
Collected By:	K. MacDougall

SAMPLE CHARACTERIZATION

Received (Date and Time):	September 2, 2011; 4:30 PM
Volume:	1 x 20 L
Temperature:	15.9°C
Dissolved Oxygen:	8.9 mg/L
pH:	7.7 pH units
Conductivity:	1675 µS/cm
Colour:	Clear, light yellow
Odour:	None
Storage:	48 hrs @ 4.0 ± 2.0°C; Overnight @ 15.0 ± 1.0°C

DILUTION WATER CHARACTERIZATION (MONTHLY AVERAGE)

Source:	St. John's Dechlorinated
Dissolved Oxygen:	9.8 ± 0.3 mg/L
Conductivity:	123 ± 11 µS/cm
Hardness:	28 ± 2 mg/L
pH:	7.6 ± 0.1 pH units
Date Revised:	September 7, 2011

TEST CONDITIONS

Started (Date and Time):	September 6, 2011; 10:59 am
Ended (Date and Time):	September 10, 2011; 10:59 am
Type of Test:	96 hour static LT_{50} (Pass/Fail)
Volume of Test Solutions:	20 Litres
Photoperiod:	16 Light/08 Dark
Light Intensity:	249 Lux
Aeration Rate:	6.5 ± 1.0 mL/min.L^{-1}
Preaeration Time:	30 mins
Test Temperature:	15 ± 1 °C
Duration:	96 hours

TEST ORGANISM

Species:	Rainbow Trout (*Oncorhynchus mykiss*)		
Source:	Rainbow Springs Hatchery		
Batch Number:	11-08		
Number per Tank:	10		
% Mortality:	0% (7 days prior to testing)		
Mean Fork Length (cm):	4.3 ± 0.3	Range (cm):	3.7 – 4.6
Mean Total Weight (g):	0.8 ± 0.2	Range (g):	0.5 – 1.0
Loading Density:	0.4 g/L		

Reference: Toxicology Testing Results

TEST RESULTS

Lab Refer No.:	B-2486-09
Sample Material:	PLCS
Collection Date:	September 2, 2011; 2:00 PM
Protocol:	EPS 1/RM/13
Test Type:	LT_{50} (Pass/Fail)
LT_{50} value (static, acute):	> 96hrs
95% Confidence Intervals:	N/A

Effluent Conc.(%)	Temp(°C)		D.O. (mg/L)		pH (units)		Cond.(µs/cm)		Mortality
	Init.	Final	Init.	Final	Init.	Final	Init.	Final	(%)
100	15.9	14.5	8.9	9.7	7.7	8.1	1675	392	0
0	15.0	14.5	9.2	9.7	7.6	7.6	133	141	0

COMMENTS:

- Arrival temperature of 19.5°C.
- The sample contained tiny grains of sand.
- Samples have not been pH adjusted or filtered.
- The above analysis was conducted according to protocols indicated. The above results, which refer to the sample(s) tested only, are for your information and will be held in the strictest of confidence by this firm.
- Sample controls are considered a part of a sample test and as such are subject to the same treatment. (This includes, but is not limited to, aeration and temperature testing requirements.)

REFERENCE TOXICITY TEST DATA (LOG SCALE)

Test Organism:	*Oncorhynchus mykiss*
Toxicant:	Phenol
Fish Batch No.:	11-08
Reference Toxicant Date:	September 2 - 6, 2011
LC_{50} Value:	0.85 mg/L
95% Confidence Limits:	0.70 – 1.0 mg/L
Historic Mean ± 2 SD (Warning Limits):	1.0 ± 0.1 mg/L

Performed by: Amanda Woodrow/Lana Combdon

Technical Reviewer: Dianne Hunt-Hall / DHuntHall
(Print Name/Signature)

Senior Reviewer: SuzetteWinter
(Print Name/Signature) Date: Sept 19/11

Reference: Toxicology Testing Results

ATTACHMENT A

Bench Data Sheet (s)

Jacques Whitford Environment Limited Laboratory Division	JWEL Lab Form: Bio-0011 Date: May 30, 2003

LT50 Fish Bioassay Data Sheet

Client: CBCL
Kelly MacDougall
187 Kenmount Road
St. John's, NL
A1B 3P9
(709) 364-8623
(709) 364-8627

Sample ID # B-2486-09
Client # 10855

Light Intensity: 249 lux
Ammonia (Init.): —
Ammonia (Fin.): —

Sample Material: PLCS
Start Date: 090611
Finish Date: 091011
Date Collected: 9/2/2011 Time Collected: 2:00 PM
Date Received: 9/2/2011 Time Received: 4:30 PM

Preaeration Time: 30 min.
Test Org - Batch #: 11-08
Source: RSH
Test Start Date: 090611
Test Start Time: 10:59.

Clarity (I): Clear
Colour (I): light yellow
Odour (I): None
Susp. Part. (I): tiny grains of sand.
Other (I): Accept @ 19.5°C. Stored in Fridge #6 @ 4°C ± 2 for 2 days then temper in WB#3 @ 15°C ± 1. overnight.

Aeration Rate: 6.5 ± mL/min. L-1
Submitted by K. MacDougall

Conc: 100% 20L used
Salinity: 0.2ppt

Conc: 0%
Salinity:

Volume: 25 Litres received
Storage:

Time	Day	Monit By	HR.	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (µS/cm)	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (uS/cm)
1039	090611	AW	INT	—	15.9	8.9	7.7	1675					
10:59	090611	AW	0	—	15.9	8.9	7.7	1675	—	15.0	9.2	7.6	133
10:10	090711	LC	24	—	15.0	9.3	8.0	376	—	15.0	9.3	7.6	132
11:30	090811	LC	48	—	14.5	9.5	8.1	376	—	14.5	9.5	7.6	133
9:15	090911	LC	72	—	14.6	9.6	8.1	376	—	14.8	9.4	7.6	134
10:59	091011	LC	96	—	14.5	9.7	8.1	392	—	14.5	9.7	7.6	141

Fish Behaviour Comments
All fish are alive @ 96 hrs with normal behaviour.

Fish Measurements

Fork Length (cm)	Wet Weight (g)
4.4	0.8
4.5	1.0
4.6	0.9
4.6	0.9
4.3	0.8
3.7	0.6
3.7	0.5
4.4	0.8
4.5	0.9
4.4	0.7
Mean +/- SD	
4.31	0.33
0.79	0.15

Loading Density (g/l): 0.40g/L (SW)
LT50: 796hrs.

Pretreatment: Composite ☐ Temp ☒ Other ☐
Dissolved Oxygen ☒ Water Hardness ☐

Comments EPS1 / RM / 13 Second Edition - December 2000

Clarity (F):
Colour (F):
Odour (F):
Susp. Part. (F): Same as initial
Other (F):

Stantec Consulting Ltd
Science Laboratory
422 Logy Bay Road
St. John's, NL A1A 5C6
Tel: (709) 576-4804
Fax: (709) 576-0008

Registered to ISO 9001:2000
ISO/IEC 17025:2005 Accredited
SCC-Food Scope (No. 268)
CALA – Environmental Scope (No. 2709)

Stantec

September 13, 2011
Project: 10885.
Lab Refer No.: B-2485-09

Report No.: 03976

CBCL
187 Kenmount Rd
St. John's, NL
A1B 3P9
Tel: (709) 364-8623
Fax: (709) 364-8627

Attention: Kelly MacDougall

Dear Ms. MacDougall

Reference: Toxicology Testing Results

Please find enclosed the results of the 96 hour bioassay conducted September 6 - 10, 2011. The toxicity test was performed on the SLCS sample. The effluent was collected on September 2, 2011. The sample was received in an acceptable condition.

Test conditions for a single concentration test were followed according to the Reference Method: For Determining Acute Lethality of Effluents to Rainbow Trout (Report EPS 1/RM/13 Second Edition-December 2000 and May 2007 amendment). All test parameters were maintained within the recommended levels outlined in the above protocol.

The SLCS effluent is not acutely lethal to the fish, since less than 50.00 % of the fish died in the 100.00 % effluent during the 96 hour period. The LT50 was determined to be greater than 96 hours.

Please call if you have any questions regarding these results.

Sincerely,

STANTEC CONSULTING LTD

Michelle Pye, B.Sc.
Toxicology Lead, Science Laboratory

Attachments:

A- Bench Data Sheet(s)

Reference: Toxicology Testing Results

SAMPLE

Lab Refer.No.:	B-2485-09
Company:	CBCL
Sample Material:	SLCS
Sampling Method:	Not provided
Sample Condition:	Received in acceptable condition
Collected:	September 2, 2011; 2:00 pm
Collected By:	K. MacDougall

SAMPLE CHARACTERIZATION

Received (Date and Time):	September 2, 2011; 4:30 pm
Volume:	1 x 20 L
Temperature:	16.0°C
Dissolved Oxygen:	8.2 mg/L
pH:	7.5 pH units
Conductivity:	624 µS/cm
Colour:	Clear, colourless
Odour:	None
Storage:	48 hrs @ 4.0 ± 2.0°C; Overnight @ 15.0 ± 1.0°C

DILUTION WATER CHARACTERIZATION (MONTHLY AVERAGE)

Source:	St. John's Dechlorinated
Dissolved Oxygen:	9.8 ± 0.3 mg/L
Conductivity:	123 ± 11 µS/cm
Hardness:	28 ± 2 mg/L
pH:	7.6 ± 0.1 pH units
Date Revised:	September 7, 2011

TEST CONDITIONS

Started (Date and Time):	September 6, 2011; 11:20 am
Ended (Date and Time):	September 10, 2011; 11:20 am
Type of Test:	96 hour static LT_{50} (Pass/Fail)
Volume of Test Solutions:	20 Litres
Photoperiod:	16 Light/08 Dark
Light Intensity:	336 Lux
Aeration Rate:	6.5 ± 1.0 mL/min.L^{-1}
Preaeration Time:	30 mins
Test Temperature:	15 ± 1 °C
Duration:	96 hours

TEST ORGANISM

Species:	Rainbow Trout (*Oncorhynchus mykiss*)		
Source:	Rainbow Springs Hatchery		
Batch Number:	11-08		
Number per Tank:	10		
% Mortality:	0% (7 days prior to testing)		
Mean Fork Length (cm):	4.3 ± 0.2	Range (cm):	4.0 – 4.5
Mean Total Weight (g):	0.8 ± 0.2	Range (g):	0.5 – 1.0
Loading Density:	0.4 g/L		

Reference: Toxicology Testing Results

TEST RESULTS

Lab Refer No.:	B-2485-09
Sample Material:	SLCS
Collection Date:	September 2, 2011; 2:00 pm
Protocol:	EPS 1/RM/13
Test Type:	LT_{50} (Pass/Fail)
LT_{50} value (static, acute):	> 96hrs
95% Confidence Intervals:	N/A

Effluent Conc.(%)	Temp(°C)		D.O. (mg/L)		pH (units)		Cond.(µs/cm)		Mortality
	Init.	Final	Init.	Final	Init.	Final	Init.	Final	(%)
100	15.6	14.5	8.7	9.8	7.5	8.5	625	552	0
0	15.0	14.5	9.2	9.8	7.6	7.8	133	141	0

COMMENTS:

- Arrival temperature of 19.5°C.
- The sample contained a few very dark/black suspended particles that settled during the bioassay.
- Samples have not been pH adjusted or filtered.
- The above analysis was conducted according to protocols indicated. The above results, which refer to the sample(s) tested only, are for your information and will be held in the strictest of confidence by this firm.
- Sample controls are considered a part of a sample test and as such are subject to the same treatment. (This includes, but is not limited to, aeration and temperature testing requirements.)

REFERENCE TOXICITY TEST DATA (LOG SCALE)

Test Organism:	*Oncorhynchus mykiss*
Toxicant:	Phenol
Fish Batch No.:	11-08
Reference Toxicant Date:	September 2 - 6, 2011
LC_{50} Value:	0.85 mg/L
95% Confidence Limits:	0.70 – 1.0 mg/L
Historic Mean ± 2 SD (Warning Limits):	1.0 ± 0.1 mg/L

Performed by: Amanda Woodrow/Lana Combdon

Technical Reviewer: Dianne Hunt-Hall/Dianne Hall
(Print Name/Signature)

Senior Reviewer: Suzette Winter
(Print Name/Signature)

Date: Sept 16/11

Reference: Toxicology Testing Results

ATTACHMENT A

Bench Data Sheet (s)

Jacques Whitford Environment Limited Laboratory Division	JWEL Lab Form: Bio-0011 Date: May 30, 2003

LT50 Fish Bioassay Data Sheet

Client: CBCL
Kelly MacDougall
187 Kenmount Road
St. John's, NL
A1B 3P9
(709) 364-8623
(709) 364-8627

Sample ID # B-2485-09

Client # 10855

Light Intensity: 336 lux
Ammonia (Init.): —
Ammonia (Fin.): —

Sample Material: SLCS
Start Date: 090611
Finish Date: 091011
Date Collected: 9/2/2011 Time Collected: 2:00 PM
Date Received: 9/2/2011 Time Received: 4:30 PM

Preaeration Time: 30 min.
Test Org - Batch #: 11-08
Source: RSH
Test Start Date: 090611
Test Start Time: 11:20

Clarity (I): Clear
Colour (I): Colourless
Odour (I): None
Susp. Part. (I): few very dark/black
Other (I): Submitted by K. MacDougall/Received@ 19.5°C

Aeration Rate: 6.5 ± mL/min. L-1

Conc: 2.5L used @ 090611
Salinity: 0.6ppt. 100%

Conc:
Salinity: 0%

Volume: 25 Litres received
Storage: Stored in Fridge #6 @ 4°C ± 2 for 2 days. Then tempered in WB #3 @ 15°C ± 1 overnight

Time	Day	Monit By	HR.	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (µS/cm)	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (uS/cm)
10:50	090611	AW	INT	—	16.0	8.2	7.5	624					
11:20	090611	AW	0	—	15.6	8.7	7.5	625	—	15.0	9.2	7.6	133
10:15	090711	LC	24	—	15.0	9.6	8.5	608	—	15.0	8.0	7.2	132
11:25	090811	LC	48	—	14.5	9.6	8.5	592	—	14.5	9.0	7.5	133
9:30	090911	LC	72	—	14.9	9.6	8.5	559	—	14.8	9.7	7.7	135
11:20	091011 (091011) (AW)	LC	96	—	14.5	9.8	8.5	552	—	14.5	9.8	7.8	141

Fish Behaviour Comments
All fish are alive @ 96hrs with normal behaviour

Fish Measurements

Fork Length (cm)	Wet Weight (g)
4.3	0.8
4.5	1.0
4.5	1.0
4.1	0.5
4.0	0.5
4.5	1.0
4.3	0.8
4.5	0.9
4.4	0.7
4.3	0.7
Mean +/- SD	
4.34	0.18
0.79	0.19

Loading Density (g/l): 0.40
LT50: >96hrs

Pretreatment: Composite ☐ Temp ☒ Other ☐
Dissolved Oxygen ☒ Water Hardness ☐

Comments EPS1 / RM / 13 Second Edition - December 2000

Clarity (F): Clear
Colour (F): pale yellow
Odour (F): no
Susp. Part. (F): settled to bottom
Other (F): —

Your Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Your C.O.C. #: B 081549

Attention: Colin LeFrense
CBCL Limited
St. John's-Standing Offer
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2012/02/15

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B218241
Received: 2012/02/07, 16:35

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
TEH in Water (PIRI)	1	2012/02/09	2012/02/10	ATL SOP 00198	Based on Atl. PIRI
TEH in Water (PIRI)	2	2012/02/09	2012/02/13	ATL SOP 00198	Based on Atl. PIRI
VPH in Water (PIRI)	2	2012/02/09	2012/02/09	ATL SOP 00200	Based on Atl. PIRI
VPH in Water (PIRI)	1	2012/02/09	2012/02/10	ATL SOP 00200	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	1	N/A	2012/02/10		Based on Atl. PIRI
ModTPH (T1) Calc. for Water	2	N/A	2012/02/13		Based on Atl. PIRI

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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

Encryption Key

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

ROB WHELAN, Project Manager
Email: RWhelan@maxxam.ca
Phone# (709) 754-0203

==========

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

Total cover pages: 1

Maxxam Job #: B218241
Report Date: 2012/02/15

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Sampler Initials: CL

ATLANTIC MUST IN WATER - PIRI TIER I (WATER)

Maxxam ID		ML8806	ML8806	ML8807	ML8808		
Sampling Date		2012/02/07	2012/02/07	2012/02/07	2012/02/07		
COC Number		B 081549	B 081549	B 081549	B 081549		
	Units	**PLCS**	**PLCS Lab-Dup**	**SLCS**	**Dup**	**RDL**	**QC Batch**
Petroleum Hydrocarbons							
Benzene	mg/L	ND	ND	ND	ND	0.0010	2759709
Toluene	mg/L	ND	ND	ND	ND	0.0010	2759709
Ethylbenzene	mg/L	ND	ND	ND	ND	0.0010	2759709
Xylene (Total)	mg/L	ND	ND	ND	ND	0.0020	2759709
C6 - C10 (less BTEX)	mg/L	ND	ND	ND	ND	0.010	2759709
>C10-C16 Hydrocarbons	mg/L	ND	ND	0.052	0.051	0.050	2759638
>C16-C21 Hydrocarbons	mg/L	ND	ND	0.056	0.060	0.050	2759638
>C21-<C32 Hydrocarbons	mg/L	ND	ND	0.10	ND	0.10	2759638
Modified TPH (Tier1)	mg/L	ND		0.21	0.11	0.10	2758394
Reached Baseline at C32	mg/L	Yes	Yes	No	Yes	N/A	2759638
Hydrocarbon Resemblance	mg/L			SEECOMMENT (1)	SEECOMMENT (2)	N/A	2759638
Surrogate Recovery (%)							
Isobutylbenzene - Extractable	%	118	136 (3)	99	99		2759638
n-Dotriacontane - Extractable	%	116	139 (3)	99	96		2759638
Isobutylbenzene - Volatile	%	89	99	89	91		2759709

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) One product in fuel/lube oil range.
(2) One product in fuel oil range.
(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B218241
Report Date: 2012/02/15

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Sampler Initials: CL

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report

Maxxam Job Number: ZB218241

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2759638	SPI	Matrix Spike						
		[ML8807-01]	Isobutylbenzene - Extractable	2012/02/10		110	%	30 - 130
			n-Dotriacontane - Extractable	2012/02/10		104 (1)	%	30 - 130
			>C10-C16 Hydrocarbons	2012/02/10		52	%	30 - 130
			>C16-C21 Hydrocarbons	2012/02/10		60	%	30 - 130
			>C21-<C32 Hydrocarbons	2012/02/10		56	%	30 - 130
		Spiked Blank	Isobutylbenzene - Extractable	2012/02/10		95	%	30 - 130
			n-Dotriacontane - Extractable	2012/02/10		103	%	30 - 130
			>C10-C16 Hydrocarbons	2012/02/10		82	%	30 - 130
			>C16-C21 Hydrocarbons	2012/02/10		97	%	30 - 130
			>C21-<C32 Hydrocarbons	2012/02/10		98	%	30 - 130
		Method Blank	Isobutylbenzene - Extractable	2012/02/10		100	%	30 - 130
			n-Dotriacontane - Extractable	2012/02/10		99	%	30 - 130
			>C10-C16 Hydrocarbons	2012/02/10	ND, RDL=0.050		mg/L	
			>C16-C21 Hydrocarbons	2012/02/10	ND, RDL=0.050		mg/L	
			>C21-<C32 Hydrocarbons	2012/02/10	ND, RDL=0.10		mg/L	
		RPD [ML8806-01]	>C10-C16 Hydrocarbons	2012/02/10	NC		%	40
			>C16-C21 Hydrocarbons	2012/02/10	NC		%	40
			>C21-<C32 Hydrocarbons	2012/02/10	NC		%	40
2759709	DDE	Matrix Spike						
		[ML8807-01]	Isobutylbenzene - Volatile	2012/02/10		91	%	70 - 130
			Benzene	2012/02/10		85	%	70 - 130
			Toluene	2012/02/10		85	%	70 - 130
			Ethylbenzene	2012/02/10		85	%	70 - 130
			Xylene (Total)	2012/02/10		83	%	70 - 130
		Spiked Blank	Isobutylbenzene - Volatile	2012/02/10		98	%	70 - 130
			Benzene	2012/02/10		95	%	70 - 130
			Toluene	2012/02/10		90	%	70 - 130
			Ethylbenzene	2012/02/10		90	%	70 - 130
			Xylene (Total)	2012/02/10		92	%	70 - 130
		Method Blank	Isobutylbenzene - Volatile	2012/02/10		100	%	70 - 130
			Benzene	2012/02/10	ND, RDL=0.0010		mg/L	
			Toluene	2012/02/10	ND, RDL=0.0010		mg/L	
			Ethylbenzene	2012/02/10	ND, RDL=0.0010		mg/L	
			Xylene (Total)	2012/02/10	ND, RDL=0.0020		mg/L	
			C6 - C10 (less BTEX)	2012/02/10	ND, RDL=0.010		mg/L	
		RPD [ML8806-01]	Benzene	2012/02/10	NC		%	40
			Toluene	2012/02/10	NC		%	40
			Ethylbenzene	2012/02/10	NC		%	40
			Xylene (Total)	2012/02/10	NC		%	40
			C6 - C10 (less BTEX)	2012/02/10	NC		%	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Fuel/lube oil range recovery(ies) not within acceptance limits. Insufficient sample to repeat.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Validation Signature Page

Maxxam Job #: B218241

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

Paula Chaplin

PAULA CHAPLIN, Project Manager

==========

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Maxxam Analytics International Corporation
200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
49 Elizabeth Ave., St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
90 Esplanade Sydney, NS B1P 1A1 Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

MAXXAM Chain of Custody Record

COC #: B 081549 Page 1 of 1

This column for lab use only:

Client Code: 19037

Maxxam Job #: B218241

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			4	4	4	4

Integrity: YES (NO) — Integrity / Checklist by: PMC

Labelled by: PMC — Location / Bin #:

INVOICE INFORMATION:

Company Name: CBCL Ltd.
Contact Name: Colin LeFrancis
Address: 187 Kenmount Rd.
St. John's, NL Postal Code: XA
Email: colinl@cbcl.ca
Ph: 709-730-1832 Fax:

REPORT INFORMATION (if differs from invoice):

Company Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

PO #
Project # / Phase #: 113080.00
Project Name / Site Location: Come by Chance Landfill
Quote
Site #
Task Order #
Sampled by: Colin LeFrancis

TURNAROUND TIME

Standard ☑
10 day ☐
If RUSH Specify Date:
Pre-schedule rush work
Charge for # Jars used but not submitted

Guideline Requirements / Detection Limits / Special Instructions

Please report phosphates as P_2O_5
Lab filtration and preservation is required for samples.
Dissolved RCAp/MI for samples.

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

Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAP-30 Choose Total or Diss Metals	RCAP-MS Choose Total or Diss Metals	Metals Water: Total Digest (Default Method) for well water, surface water	Metals Water: Dissolved for ground water	Metals Water: Mercury	Metals Soil: Metals & Mercury Default Available Digest Method	Metals Soil: Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals Soil: Mercury Low level by Cold Vapour AA	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons: Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32	Hydrocarbons: NB Potable Water BTEX, VPH, Low level T.E.H.	Hydrocarbons: TPH Fractionation	Hydrocarbons: PAH's	Hydrocarbons: PAH's with Acridine, Quinoline	Grain Size - PSA	Total Phenols	Sulphides	Chromium (Hexavalent)	TSS
1 PLCS	Leachate	~~Feb 7~~ Feb 7/12			✓		✓			✓						✓				✓	✓	✓	✓	✓	✓	✓
2 SLCS	Leachate	↓			✓		✓			✓						✓				✓	✓	✓	✓	✓	✓	✓
3 Dup	Leachate				✓		✓			✓						✓				✓	✓	✓	✓	✓	✓	✓
4																										
5																										
6																										
7																										
8																										
9																										
10																										

RELINQUISHED BY: (Signature/Print) Colin LeFrancis — Date: Feb 7 — Time: 4:30p.

RECEIVED BY: (Signature/Print) — Date: 08/2/7 — Time: 4:35p

Your Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Your C.O.C. #: b081549

Attention: Colin LeFrense
CBCL Limited
St. John's-Standing Offer
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2012/02/21

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B219012
Received: 2012/02/09, 09:22

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Carbonate, Bicarbonate and Hydroxide	3	N/A	2012/02/14	CAM SOP-00102	APHA 4500-CO2 D
Alkalinity	3	N/A	2012/02/16	ATL SOP 00013	Based on EPA310.2
Chloride	3	N/A	2012/02/16	ATL SOP 00014	Based on SM4500-Cl-
Colour	3	N/A	2012/02/17	ATL SOP 00020	Based on SM2120C
Hexavalent Cr Low Level (Sub fr Bedford) (1)	3	2012/02/10	2012/02/21		
Conductance - water	3	N/A	2012/02/14	ATL SOP 00004/00006	Based on SM2510B
Hardness (calculated as CaCO3)	3	N/A	2012/02/14	ATL SOP 00048	Based on SM2340B
Mercury - Total (CVAA,LL)	3	2012/02/10	2012/02/13	ATL SOP 00026	Based on EPA245.1
Metals Water Diss. MS	1	N/A	2012/02/10	ATL SOP 00059	Based on EPA6020A
Metals Water Diss. MS	2	N/A	2012/02/13	ATL SOP 00059	Based on EPA6020A
Ion Balance (% Difference)	3	N/A	2012/02/20		
Anion and Cation Sum	3	N/A	2012/02/16		
Nitrogen Ammonia - water	3	N/A	2012/02/15	ATL SOP 00015	Based on USEPA 350.1
Nitrogen - Nitrate + Nitrite	3	N/A	2012/02/17	ATL SOP 00016	Based on USGS - Enz.
Nitrogen - Nitrite	3	N/A	2012/02/16	ATL SOP 00017	Based on SM4500-NO2B
Nitrogen - Nitrate (as N)	3	N/A	2012/02/17	ATL SOP 00018	Based on ASTMD3867
PAH in Water by GC/MS (SIM)	2	2012/02/10	2012/02/15	ATL SOP 00103	Based on EPA 8270C
PCBs in water by GC/ECD	2	2012/02/10	2012/02/13	ATL SOP 00107	Based on EPA8082
Phenols (4-AAP)	3	N/A	2012/02/14	ATL SOP 00039	Based on EPA 420.2
pH	3	N/A	2012/02/14	ATL SOP 00003	Based on SM4500H+B
Phosphorus - ortho	3	N/A	2012/02/17	ATL SOP 00021	Based on USEPA 365.1
Sat. pH and Langelier Index (@ 20C)	3	N/A	2012/02/20		
Sat. pH and Langelier Index (@ 4C)	3	N/A	2012/02/20		
Reactive Silica	3	N/A	2012/02/16	ATL SOP 00022	Based on EPA 366.0
Sulphate	3	N/A	2012/02/17	ATL SOP 00023	Based on EPA 375.4
Sulphide (2)	3	N/A	2012/02/14	CAM SOP-00455	SM 4500-S G
Total Dissolved Solids (TDS calc)	3	N/A	2012/02/20		
Organic carbon - Total (TOC)	3	N/A	2012/02/17	ATL SOP 00037	Based on SM5310C
Phosphorus Total (W) & P2O5 calculated	3	N/A	2012/02/17	ATL SOP 00057	Based on EPA365.1
Total Suspended Solids	1	N/A	2012/02/09	ATL SOP 00007	based on EPA 160.2
Total Suspended Solids	2	N/A	2012/02/14	ATL SOP 00007	based on EPA 160.2
Turbidity	3	N/A	2012/02/15	ATL SOP 00011	based on EPA 180.1

Remarks:

Your Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Your C.O.C. #: b081549

Attention: Colin LeFrense
CBCL Limited
St. John's-Standing Offer
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2012/02/21

CERTIFICATE OF ANALYSIS

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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

(1) This test was performed by Bedford to Burnaby Env
(2) This test was performed by Maxxam Analytics Mississauga

Encryption Key

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

KERI MACKAY, Project Manager - Bedford
Email: kmackay@maxxam.ca
Phone# (902) 420-0203 Ext:294

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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.

Total cover pages: 2

Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		MM2602	MM2603		MM2604	MM2604		
Sampling Date		2012/02/07	2012/02/07		2012/02/07	2012/02/07		
COC Number		b081549	b081549		b081549	b081549		
	Units	**PLCS**	**SLCS**	**RDL**	**DUP**	**DUP Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters								
Anion Sum	me/L	6.03	10.2	N/A	10.3		N/A	2759908
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	235	409	1.0	413		1.0	2759905
Calculated TDS	mg/L	323	535	1.0	541		1.0	2759911
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.1	1.8	1.0	1.9		1.0	2759905
Cation Sum	me/L	5.90	9.89	N/A	9.89		N/A	2759908
Hardness (CaCO3)	mg/L	250	430	1.0	420		1.0	2759906
Ion Balance (% Difference)	%	1.09	1.69	N/A	2.22		N/A	2759907
Langelier Index (@ 20C)	N/A	0.517	0.890		0.920			2759909
Langelier Index (@ 4C)	N/A	0.268	0.642		0.673			2759910
Nitrate (N)	mg/L	0.58	0.16	0.050	0.65		0.050	2760359
Saturation pH (@ 20C)	N/A	7.16	6.77		6.77			2759909
Saturation pH (@ 4C)	N/A	7.41	7.02		7.02			2759910
Inorganics								
Total Alkalinity (Total as CaCO3)	mg/L	240	410	25	420	420	25	2765843
Dissolved Chloride (Cl)	mg/L	25	43	1.0	41	43	1.0	2765846
Colour	TCU	18	11	5.0	11	10	5.0	2765871
Nitrate + Nitrite	mg/L	0.59	0.16	0.050	0.66	0.64	0.050	2765874
Nitrite (N)	mg/L	0.010	ND	0.010	0.010	ND	0.010	2765875
Nitrogen (Ammonia Nitrogen)	mg/L	0.12	0.26	0.050	0.29		0.050	2764979
Total Organic Carbon (C)	mg/L	11 (1)	15 (1)	5.0	17 (1)		5.0	2767668
Orthophosphate (P)	mg/L	ND	ND	0.010	ND	ND	0.010	2765872
pH	pH	7.68	7.66	N/A	7.69		N/A	2763397
Reactive Silica (SiO2)	mg/L	9.7	15	0.50	15	15	0.50	2765870
Dissolved Sulphate (SO4)	mg/L	28	38	2.0	40	40	4.0	2765848
Turbidity	NTU	4.5	0.80	0.10	1.2		0.10	2764701
Conductivity	uS/cm	560	900	1.0	910		1.0	2763398
Metals								
Dissolved Aluminum (Al)	ug/L	9.4	5.6	5.0	6.3		5.0	2760932
Dissolved Antimony (Sb)	ug/L	ND	ND	1.0	ND		1.0	2760932
Dissolved Arsenic (As)	ug/L	ND	ND	1.0	ND		1.0	2760932

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Elevated reporting limit due to sample matrix.

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Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

ATLANTIC RCAP-MS DISSOLVED IN WATER (WATER)

Maxxam ID		MM2602	MM2603		MM2604	MM2604		
Sampling Date		2012/02/07	2012/02/07		2012/02/07	2012/02/07		
COC Number		b081549	b081549		b081549	b081549		
	Units	**PLCS**	**SLCS**	**RDL**	**DUP**	**DUP Lab-Dup**	**RDL**	**QC Batch**
Dissolved Barium (Ba)	ug/L	23.9	32.9	1.0	33.3		1.0	2760932
Dissolved Beryllium (Be)	ug/L	ND	ND	1.0	ND		1.0	2760932
Dissolved Bismuth (Bi)	ug/L	ND	ND	2.0	ND		2.0	2760932
Dissolved Boron (B)	ug/L	1280	1750	50	1740		50	2760932
Dissolved Cadmium (Cd)	ug/L	0.019	ND	0.017	ND		0.017	2760932
Dissolved Calcium (Ca)	ug/L	78000	124000	100	123000		100	2760932
Dissolved Chromium (Cr)	ug/L	11.1	ND	1.0	67.0		1.0	2760932
Dissolved Cobalt (Co)	ug/L	ND	ND	0.40	ND		0.40	2760932
Dissolved Copper (Cu)	ug/L	2.3	ND	2.0	ND		2.0	2760932
Dissolved Iron (Fe)	ug/L	269	ND	50	ND		50	2760932
Dissolved Lead (Pb)	ug/L	ND	ND	0.50	ND		0.50	2760932
Dissolved Magnesium (Mg)	ug/L	14300	28500	100	28200		100	2760932
Dissolved Manganese (Mn)	ug/L	2620	4670	2.0	4640		2.0	2760932
Dissolved Molybdenum (Mo)	ug/L	ND	ND	2.0	ND		2.0	2760932
Dissolved Nickel (Ni)	ug/L	ND	ND	2.0	ND		2.0	2760932
Dissolved Potassium (K)	ug/L	5800	8570	100	8680		100	2760932
Dissolved Selenium (Se)	ug/L	ND	ND	1.0	ND		1.0	2760932
Dissolved Silver (Ag)	ug/L	ND	ND	0.10	ND		0.10	2760932
Dissolved Sodium (Na)	ug/L	15400	25700	100	27000		100	2760932
Dissolved Strontium (Sr)	ug/L	161	305	2.0	301		2.0	2760932
Dissolved Thallium (Tl)	ug/L	ND	ND	0.10	ND		0.10	2760932
Dissolved Tin (Sn)	ug/L	ND	ND	2.0	ND		2.0	2760932
Dissolved Titanium (Ti)	ug/L	ND	ND	2.0	ND		2.0	2760932
Dissolved Uranium (U)	ug/L	0.35	0.91	0.10	0.95		0.10	2760932
Dissolved Vanadium (V)	ug/L	ND	ND	2.0	ND		2.0	2760932
Dissolved Zinc (Zn)	ug/L	10.3	6.8	5.0	26.8		5.0	2760932

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

Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

RESULTS OF ANALYSES OF WATER

Maxxam ID		MM2602		MM2603	MM2604		
Sampling Date		2012/02/07		2012/02/07	2012/02/07		
COC Number		b081549		b081549	b081549		
	Units	**PLCS**	**RDL**	**SLCS**	**DUP**	**RDL**	**QC Batch**
Inorganics							
Phenols-4AAP	mg/L	0.0053	0.0010	0.0063	0.0087	0.0010	2763910
Total Phophorous (as P2O5)	mg/L	0.082	0.050	ND	ND	0.050	2764211
Total Phosphorus	mg/L	0.036	0.020	ND	ND	0.020	2764211
Total Suspended Solids	mg/L	5.2	2.0	4.0	2.8	1.0	2760292
Sulphide	mg/L	ND	0.02	ND	ND	0.02	2762737
Subcontracted Analysis							
Subcontract Parameter	N/A	ATTACHED	N/A	ATTACHED	ATTACHED	N/A	2761544

ND = Not detected
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QC Batch = Quality Control Batch

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Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

MERCURY BY COLD VAPOUR AA (WATER)

Maxxam ID		MM2602	MM2603	MM2604		
Sampling Date		2012/02/07	2012/02/07	2012/02/07		
COC Number		b081549	b081549	b081549		
	Units	**PLCS**	**SLCS**	**DUP**	**RDL**	**QC Batch**
Metals						
Total Mercury (Hg)	ug/L	ND	ND	ND	0.013	2762491

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

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Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		MM2602	MM2602	MM2603		
Sampling Date		2012/02/07	2012/02/07	2012/02/07		
COC Number		b081549	b081549	b081549		
	Units	**PLCS**	**PLCS Lab-Dup**	**SLCS**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons						
1-Methylnaphthalene	ug/L	ND	ND	ND	0.050	2760834
2-Methylnaphthalene	ug/L	ND	ND	ND	0.050	2760834
Acenaphthene	ug/L	0.011	ND	ND	0.010	2760834
Acenaphthylene	ug/L	ND	ND	ND	0.010	2760834
Anthracene	ug/L	ND	ND	ND	0.010	2760834
Benzo(a)anthracene	ug/L	ND	ND	ND	0.010	2760834
Benzo(a)pyrene	ug/L	ND	ND	ND	0.010	2760834
Benzo(b)fluoranthene	ug/L	ND	ND	ND	0.010	2760834
Benzo(g,h,i)perylene	ug/L	ND	ND	ND	0.010	2760834
Benzo(j)fluoranthene	ug/L	ND	ND	ND	0.010	2760834
Benzo(k)fluoranthene	ug/L	ND	ND	ND	0.010	2760834
Chrysene	ug/L	ND	ND	0.013	0.010	2760834
Dibenz(a,h)anthracene	ug/L	ND	ND	ND	0.010	2760834
Fluoranthene	ug/L	0.011	0.011	0.018	0.010	2760834
Fluorene	ug/L	ND	ND	ND	0.010	2760834
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.017	ND	0.010	2760834
Naphthalene	ug/L	ND	ND	ND	0.20	2760834
Perylene	ug/L	ND	ND	ND	0.010	2760834
Phenanthrene	ug/L	0.034	0.035	0.012	0.010	2760834
Pyrene	ug/L	0.046	0.043	0.085	0.010	2760834
Surrogate Recovery (%)						
D10-Anthracene	%	88	87	87		2760834
D14-Terphenyl	%	92	92	88 (1)		2760834
D8-Acenaphthylene	%	105	105	105		2760834

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) PAH sample contained sediment.

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Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		MM2602	MM2603		
Sampling Date		2012/02/07	2012/02/07		
COC Number		b081549	b081549		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	ND	ND	0.050	2760831
Surrogate Recovery (%)					
Decachlorobiphenyl	%	97	93		2760831

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

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Maxxam Job #: B219012
Report Date: 2012/02/21

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL

Package 1	4.0°C

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

GENERAL COMMENTS

Results relate only to the items tested.

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CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report

Maxxam Job Number: DB219012

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2760292	MKH	QC Standard	Total Suspended Solids	2012/02/14		98	%	80 - 120
		Method Blank	Total Suspended Solids	2012/02/14	ND, RDL=1.0		mg/L	
		RPD	Total Suspended Solids	2012/02/14	0		%	25
2760831	KJO	Spiked Blank	Decachlorobiphenyl	2012/02/13		86	%	30 - 130
			Total PCB	2012/02/13		118	%	70 - 130
		Method Blank	Decachlorobiphenyl	2012/02/13		47	%	30 - 130
			Total PCB	2012/02/13	ND, RDL=0.050		ug/L	
2760834	CMI	Matrix Spike						
		[MM2603-10]	D10-Anthracene	2012/02/15		85	%	30 - 130
			D14-Terphenyl	2012/02/15		89 (1)	%	30 - 130
			D8-Acenaphthylene	2012/02/15		106	%	30 - 130
			1-Methylnaphthalene	2012/02/15		87	%	30 - 130
			2-Methylnaphthalene	2012/02/15		94	%	30 - 130
			Acenaphthene	2012/02/15		83	%	30 - 130
			Acenaphthylene	2012/02/15		83	%	30 - 130
			Anthracene	2012/02/15		81	%	30 - 130
			Benzo(a)anthracene	2012/02/15		80	%	30 - 130
			Benzo(a)pyrene	2012/02/15		80	%	30 - 130
			Benzo(b)fluoranthene	2012/02/15		87	%	30 - 130
			Benzo(g,h,i)perylene	2012/02/15		87	%	30 - 130
			Benzo(j)fluoranthene	2012/02/15		80	%	30 - 130
			Benzo(k)fluoranthene	2012/02/15		78	%	30 - 130
			Chrysene	2012/02/15		81	%	30 - 130
			Dibenz(a,h)anthracene	2012/02/15		83	%	30 - 130
			Fluoranthene	2012/02/15		78	%	30 - 130
			Fluorene	2012/02/15		92	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2012/02/15		86	%	30 - 130
			Naphthalene	2012/02/15		81	%	30 - 130
			Perylene	2012/02/15		80	%	30 - 130
			Phenanthrene	2012/02/15		85	%	30 - 130
			Pyrene	2012/02/15		76	%	30 - 130
		Spiked Blank	D10-Anthracene	2012/02/15		85	%	30 - 130
			D14-Terphenyl	2012/02/15		92	%	30 - 130
			D8-Acenaphthylene	2012/02/15		104	%	30 - 130
			1-Methylnaphthalene	2012/02/15		89	%	30 - 130
			2-Methylnaphthalene	2012/02/15		98	%	30 - 130
			Acenaphthene	2012/02/15		93	%	30 - 130
			Acenaphthylene	2012/02/15		90	%	30 - 130
			Anthracene	2012/02/15		80	%	30 - 130
			Benzo(a)anthracene	2012/02/15		75	%	30 - 130
			Benzo(a)pyrene	2012/02/15		84	%	30 - 130
			Benzo(b)fluoranthene	2012/02/15		90	%	30 - 130
			Benzo(g,h,i)perylene	2012/02/15		86	%	30 - 130
			Benzo(j)fluoranthene	2012/02/15		86	%	30 - 130
			Benzo(k)fluoranthene	2012/02/15		82	%	30 - 130
			Chrysene	2012/02/15		79	%	30 - 130
			Dibenz(a,h)anthracene	2012/02/15		77	%	30 - 130
			Fluoranthene	2012/02/15		81	%	30 - 130
			Fluorene	2012/02/15		103	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2012/02/15		87	%	30 - 130
			Naphthalene	2012/02/15		94	%	30 - 130
			Perylene	2012/02/15		84	%	30 - 130
			Phenanthrene	2012/02/15		90	%	30 - 130
			Pyrene	2012/02/15		78	%	30 - 130
		Method Blank	D10-Anthracene	2012/02/15		97	%	30 - 130

CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB219012

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2760834	CMI	Method Blank	D14-Terphenyl	2012/02/15		95	%	30 - 130
			D8-Acenaphthylene	2012/02/15		106	%	30 - 130
			1-Methylnaphthalene	2012/02/15	ND, RDL=0.050		ug/L	
			2-Methylnaphthalene	2012/02/15	ND, RDL=0.050		ug/L	
			Acenaphthene	2012/02/15	ND, RDL=0.010		ug/L	
			Acenaphthylene	2012/02/15	ND, RDL=0.010		ug/L	
			Anthracene	2012/02/15	ND, RDL=0.010		ug/L	
			Benzo(a)anthracene	2012/02/15	ND, RDL=0.010		ug/L	
			Benzo(a)pyrene	2012/02/15	ND, RDL=0.010		ug/L	
			Benzo(b)fluoranthene	2012/02/15	ND, RDL=0.010		ug/L	
			Benzo(g,h,i)perylene	2012/02/15	ND, RDL=0.010		ug/L	
			Benzo(j)fluoranthene	2012/02/15	ND, RDL=0.010		ug/L	
			Benzo(k)fluoranthene	2012/02/15	ND, RDL=0.010		ug/L	
			Chrysene	2012/02/15	ND, RDL=0.010		ug/L	
			Dibenz(a,h)anthracene	2012/02/15	ND, RDL=0.010		ug/L	
			Fluoranthene	2012/02/15	ND, RDL=0.010		ug/L	
			Fluorene	2012/02/15	ND, RDL=0.010		ug/L	
			Indeno(1,2,3-cd)pyrene	2012/02/15	ND, RDL=0.010		ug/L	
			Naphthalene	2012/02/15	ND, RDL=0.20		ug/L	
			Perylene	2012/02/15	ND, RDL=0.010		ug/L	
			Phenanthrene	2012/02/15	ND, RDL=0.010		ug/L	
			Pyrene	2012/02/15	ND, RDL=0.010		ug/L	
		RPD [MM2602-10]	1-Methylnaphthalene	2012/02/15	NC		%	40
			2-Methylnaphthalene	2012/02/15	NC		%	40
			Acenaphthene	2012/02/15	NC		%	40
			Acenaphthylene	2012/02/15	NC		%	40
			Anthracene	2012/02/15	NC		%	40
			Benzo(a)anthracene	2012/02/15	NC		%	40
			Benzo(a)pyrene	2012/02/15	NC		%	40
			Benzo(b)fluoranthene	2012/02/15	NC		%	40
			Benzo(g,h,i)perylene	2012/02/15	NC		%	40
			Benzo(j)fluoranthene	2012/02/15	NC		%	40
			Benzo(k)fluoranthene	2012/02/15	NC		%	40
			Chrysene	2012/02/15	NC		%	40
			Dibenz(a,h)anthracene	2012/02/15	NC		%	40
			Fluoranthene	2012/02/15	NC		%	40
			Fluorene	2012/02/15	NC		%	40
			Indeno(1,2,3-cd)pyrene	2012/02/15	NC		%	40
			Naphthalene	2012/02/15	NC		%	40
			Perylene	2012/02/15	NC		%	40
			Phenanthrene	2012/02/15	NC		%	40
			Pyrene	2012/02/15	NC		%	40
2760932	DLB	Matrix Spike	Dissolved Aluminum (Al)	2012/02/10		98	%	80 - 120
			Dissolved Antimony (Sb)	2012/02/10		116	%	80 - 120
			Dissolved Arsenic (As)	2012/02/10		99	%	80 - 120
			Dissolved Barium (Ba)	2012/02/10		108	%	80 - 120
			Dissolved Beryllium (Be)	2012/02/10		104	%	80 - 120
			Dissolved Bismuth (Bi)	2012/02/10		96	%	80 - 120
			Dissolved Boron (B)	2012/02/10		99	%	80 - 120
			Dissolved Cadmium (Cd)	2012/02/10		101	%	80 - 120
			Dissolved Calcium (Ca)	2012/02/10		NC	%	80 - 120
			Dissolved Chromium (Cr)	2012/02/10		98	%	80 - 120
			Dissolved Cobalt (Co)	2012/02/10		100	%	80 - 120
			Dissolved Copper (Cu)	2012/02/10		98	%	80 - 120
			Dissolved Iron (Fe)	2012/02/10		93	%	80 - 120

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CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB219012

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2760932	DLB	Matrix Spike	Dissolved Lead (Pb)	2012/02/10		99	%	80 - 120
			Dissolved Magnesium (Mg)	2012/02/10		95	%	80 - 120
			Dissolved Manganese (Mn)	2012/02/10		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2012/02/10		101	%	80 - 120
			Dissolved Nickel (Ni)	2012/02/10		95	%	80 - 120
			Dissolved Potassium (K)	2012/02/10		95	%	80 - 120
			Dissolved Selenium (Se)	2012/02/10		100	%	80 - 120
			Dissolved Silver (Ag)	2012/02/10		94	%	80 - 120
			Dissolved Sodium (Na)	2012/02/10		NC	%	80 - 120
			Dissolved Strontium (Sr)	2012/02/10		NC	%	80 - 120
			Dissolved Thallium (Tl)	2012/02/10		96	%	80 - 120
			Dissolved Tin (Sn)	2012/02/10		99	%	80 - 120
			Dissolved Titanium (Ti)	2012/02/10		101	%	80 - 120
			Dissolved Uranium (U)	2012/02/10		108	%	80 - 120
			Dissolved Vanadium (V)	2012/02/10		99	%	80 - 120
			Dissolved Zinc (Zn)	2012/02/10		98	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2012/02/10		96	%	80 - 120
			Dissolved Antimony (Sb)	2012/02/10		112	%	80 - 120
			Dissolved Arsenic (As)	2012/02/10		100	%	80 - 120
			Dissolved Barium (Ba)	2012/02/10		99	%	80 - 120
			Dissolved Beryllium (Be)	2012/02/10		106	%	80 - 120
			Dissolved Bismuth (Bi)	2012/02/10		96	%	80 - 120
			Dissolved Boron (B)	2012/02/10		101	%	80 - 120
			Dissolved Cadmium (Cd)	2012/02/10		100	%	80 - 120
			Dissolved Calcium (Ca)	2012/02/10		95	%	80 - 120
			Dissolved Chromium (Cr)	2012/02/10		99	%	80 - 120
			Dissolved Cobalt (Co)	2012/02/10		100	%	80 - 120
			Dissolved Copper (Cu)	2012/02/10		98	%	80 - 120
			Dissolved Iron (Fe)	2012/02/10		96	%	80 - 120
			Dissolved Lead (Pb)	2012/02/10		99	%	80 - 120
			Dissolved Magnesium (Mg)	2012/02/10		96	%	80 - 120
			Dissolved Manganese (Mn)	2012/02/10		96	%	80 - 120
			Dissolved Molybdenum (Mo)	2012/02/10		98	%	80 - 120
			Dissolved Nickel (Ni)	2012/02/10		95	%	80 - 120
			Dissolved Potassium (K)	2012/02/10		94	%	80 - 120
			Dissolved Selenium (Se)	2012/02/10		102	%	80 - 120
			Dissolved Silver (Ag)	2012/02/10		97	%	80 - 120
			Dissolved Sodium (Na)	2012/02/10		94	%	80 - 120
			Dissolved Strontium (Sr)	2012/02/10		99	%	80 - 120
			Dissolved Thallium (Tl)	2012/02/10		96	%	80 - 120
			Dissolved Tin (Sn)	2012/02/10		96	%	80 - 120
			Dissolved Titanium (Ti)	2012/02/10		102	%	80 - 120
			Dissolved Uranium (U)	2012/02/10		106	%	80 - 120
			Dissolved Vanadium (V)	2012/02/10		100	%	80 - 120
			Dissolved Zinc (Zn)	2012/02/10		97	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2012/02/10	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2012/02/10	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2012/02/10	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2012/02/10	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2012/02/10	ND, RDL=1.0		ug/L	
			Dissolved Bismuth (Bi)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2012/02/10	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2012/02/10	ND, RDL=0.017		ug/L	
			Dissolved Calcium (Ca)	2012/02/10	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2012/02/10	ND, RDL=1.0		ug/L	

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Quality Assurance Report (Continued)

Maxxam Job Number: DB219012

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2760932	DLB	Method Blank	Dissolved Cobalt (Co)	2012/02/10	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Iron (Fe)	2012/02/10	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2012/02/10	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2012/02/10	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Potassium (K)	2012/02/10	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2012/02/10	ND, RDL=1.0		ug/L	
			Dissolved Silver (Ag)	2012/02/10	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2012/02/10	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2012/02/10	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2012/02/10	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2012/02/10	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2012/02/10	ND, RDL=5.0		ug/L	
		RPD	Dissolved Aluminum (Al)	2012/02/10	9.2		%	25
			Dissolved Antimony (Sb)	2012/02/10	NC		%	25
			Dissolved Arsenic (As)	2012/02/10	NC		%	25
			Dissolved Barium (Ba)	2012/02/10	4.6		%	25
			Dissolved Beryllium (Be)	2012/02/10	NC		%	25
			Dissolved Bismuth (Bi)	2012/02/10	NC		%	25
			Dissolved Boron (B)	2012/02/10	NC		%	25
			Dissolved Cadmium (Cd)	2012/02/10	NC		%	25
			Dissolved Calcium (Ca)	2012/02/10	4.3		%	25
			Dissolved Chromium (Cr)	2012/02/10	NC		%	25
			Dissolved Cobalt (Co)	2012/02/10	NC		%	25
			Dissolved Copper (Cu)	2012/02/10	3.5		%	25
			Dissolved Iron (Fe)	2012/02/10	NC		%	25
			Dissolved Lead (Pb)	2012/02/10	NC		%	25
			Dissolved Magnesium (Mg)	2012/02/10	6.3		%	25
			Dissolved Manganese (Mn)	2012/02/10	4.1		%	25
			Dissolved Molybdenum (Mo)	2012/02/10	NC		%	25
			Dissolved Nickel (Ni)	2012/02/10	NC		%	25
			Dissolved Potassium (K)	2012/02/10	5.1		%	25
			Dissolved Selenium (Se)	2012/02/10	NC		%	25
			Dissolved Silver (Ag)	2012/02/10	NC		%	25
			Dissolved Sodium (Na)	2012/02/10	4.5		%	25
			Dissolved Strontium (Sr)	2012/02/10	4.9		%	25
			Dissolved Thallium (Tl)	2012/02/10	NC		%	25
			Dissolved Tin (Sn)	2012/02/10	NC		%	25
			Dissolved Titanium (Ti)	2012/02/10	NC		%	25
			Dissolved Uranium (U)	2012/02/10	NC		%	25
			Dissolved Vanadium (V)	2012/02/10	NC		%	25
			Dissolved Zinc (Zn)	2012/02/10	NC		%	25
2762491	JRC	Matrix Spike	Total Mercury (Hg)	2012/02/13		96	%	80 - 120
		QC Standard	Total Mercury (Hg)	2012/02/13		88	%	80 - 120
		Spiked Blank	Total Mercury (Hg)	2012/02/13		93	%	80 - 120
		Method Blank	Total Mercury (Hg)	2012/02/13	ND, RDL=0.013		ug/L	
		RPD	Total Mercury (Hg)	2012/02/13	NC		%	25
2762737	XQI	Matrix Spike	Sulphide	2012/02/14		92	%	80 - 120
		Spiked Blank	Sulphide	2012/02/14		96	%	80 - 120

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CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
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Quality Assurance Report (Continued)

Maxxam Job Number: DB219012

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2762737	XQI	Method Blank	Sulphide	2012/02/14	ND, RDL=0.02		mg/L	
		RPD	Sulphide	2012/02/14	NC		%	20
2763397	MJL	QC Standard	pH	2012/02/14		100	%	80 - 120
		RPD	pH	2012/02/14	0.6		%	25
2763398	MJL	Spiked Blank	Conductivity	2012/02/14		99	%	80 - 120
		Method Blank	Conductivity	2012/02/14	ND, RDL=1.0		uS/cm	
		RPD	Conductivity	2012/02/14	0.7		%	25
2763910	SSI	Matrix Spike	Phenols-4AAP	2012/02/14		89	%	80 - 120
		QC Standard	Phenols-4AAP	2012/02/14		100	%	80 - 120
		Spiked Blank	Phenols-4AAP	2012/02/14		96	%	80 - 120
		Method Blank	Phenols-4AAP	2012/02/14	ND, RDL=0.0010		mg/L	
		RPD	Phenols-4AAP	2012/02/14	3.0		%	25
2764211	SMT	Method Blank	Total Phophorous (as P2O5)	2012/02/17	ND, RDL=0.050		mg/L	
			Total Phosphorus	2012/02/17	ND, RDL=0.020		mg/L	
2764701	MJL	QC Standard	Turbidity	2012/02/15		104	%	80 - 120
		Method Blank	Turbidity	2012/02/15	ND, RDL=0.10		NTU	
		RPD	Turbidity	2012/02/15	7.6		%	25
2764979	SMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2012/02/16		96	%	80 - 120
		QC Standard	Nitrogen (Ammonia Nitrogen)	2012/02/15		101	%	80 - 120
		Spiked Blank	Nitrogen (Ammonia Nitrogen)	2012/02/15		90	%	80 - 120
		Method Blank	Nitrogen (Ammonia Nitrogen)	2012/02/15	ND, RDL=0.050		mg/L	
		RPD	Nitrogen (Ammonia Nitrogen)	2012/02/16	NC		%	25
2765843	SMT	Matrix Spike						
		[MM2604-06]	Total Alkalinity (Total as CaCO3)	2012/02/16		NC	%	80 - 120
		QC Standard	Total Alkalinity (Total as CaCO3)	2012/02/16		101	%	80 - 120
		Spiked Blank	Total Alkalinity (Total as CaCO3)	2012/02/16		96	%	80 - 120
		Method Blank	Total Alkalinity (Total as CaCO3)	2012/02/16	ND, RDL=5.0		mg/L	
		RPD [MM2604-06]	Total Alkalinity (Total as CaCO3)	2012/02/16	0.2		%	25
2765846	SMT	Matrix Spike						
		[MM2604-06]	Dissolved Chloride (Cl)	2012/02/16		NC	%	80 - 120
		QC Standard	Dissolved Chloride (Cl)	2012/02/16		100	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2012/02/16		102	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2012/02/16	ND, RDL=1.0		mg/L	
		RPD [MM2604-06]	Dissolved Chloride (Cl)	2012/02/16	3.2		%	25
2765848	MCN	Matrix Spike						
		[MM2604-06]	Dissolved Sulphate (SO4)	2012/02/17		NC	%	80 - 120
		QC Standard	Dissolved Sulphate (SO4)	2012/02/17		110	%	80 - 120
		Spiked Blank	Dissolved Sulphate (SO4)	2012/02/17		109	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2012/02/17	ND, RDL=2.0		mg/L	
		RPD [MM2604-06]	Dissolved Sulphate (SO4)	2012/02/17	0.8		%	25
2765870	SMT	Matrix Spike						
		[MM2604-06]	Reactive Silica (SiO2)	2012/02/16		NC	%	80 - 120
		QC Standard	Reactive Silica (SiO2)	2012/02/16		106	%	75 - 125
		Spiked Blank	Reactive Silica (SiO2)	2012/02/16		104	%	80 - 120
		Method Blank	Reactive Silica (SiO2)	2012/02/16	ND, RDL=0.50		mg/L	
		RPD [MM2604-06]	Reactive Silica (SiO2)	2012/02/16	0.04		%	25
2765871	SMT	QC Standard	Colour	2012/02/17		96	%	80 - 120
		Method Blank	Colour	2012/02/17	ND, RDL=5.0		TCU	
		RPD [MM2604-06]	Colour	2012/02/17	NC		%	25
2765872	SMT	Matrix Spike						
		[MM2604-06]	Orthophosphate (P)	2012/02/17		95	%	80 - 120
		QC Standard	Orthophosphate (P)	2012/02/17		103	%	80 - 120
		Spiked Blank	Orthophosphate (P)	2012/02/17		104	%	80 - 120
		Method Blank	Orthophosphate (P)	2012/02/17	ND, RDL=0.010		mg/L	
		RPD [MM2604-06]	Orthophosphate (P)	2012/02/17	NC		%	25

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Quality Assurance Report (Continued)

Maxxam Job Number: DB219012

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2765874	MCN	Matrix Spike						
		[MM2604-06]	Nitrate + Nitrite	2012/02/17		99	%	80 - 120
		QC Standard	Nitrate + Nitrite	2012/02/17		108	%	80 - 120
		Spiked Blank	Nitrate + Nitrite	2012/02/17		103	%	80 - 120
		Method Blank	Nitrate + Nitrite	2012/02/17	ND, RDL=0.050		mg/L	
		RPD [MM2604-06]	Nitrate + Nitrite	2012/02/17	2.6		%	25
2765875	SMT	Matrix Spike						
		[MM2604-06]	Nitrite (N)	2012/02/16		94	%	80 - 120
		QC Standard	Nitrite (N)	2012/02/16		100	%	80 - 120
		Spiked Blank	Nitrite (N)	2012/02/16		99	%	80 - 120
		Method Blank	Nitrite (N)	2012/02/16	ND, RDL=0.010		mg/L	
		RPD [MM2604-06]	Nitrite (N)	2012/02/16	NC		%	25
2767668	SSI	Matrix Spike	Total Organic Carbon (C)	2012/02/17		101	%	80 - 120
		QC Standard	Total Organic Carbon (C)	2012/02/17		100	%	80 - 120
		Spiked Blank	Total Organic Carbon (C)	2012/02/17		103	%	80 - 120
		Method Blank	Total Organic Carbon (C)	2012/02/17	ND, RDL=0.50		mg/L	
		RPD	Total Organic Carbon (C)	2012/02/17	NC		%	25

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

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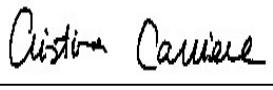
Validation Signature Page

Maxxam Job #: B219012

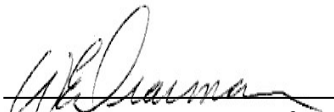
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

ALAN STEWART, Scientific Specialist (Organics)

COLLEEN ACKER



CRISTINA CARRIERE, Scientific Services



ERIC DEARMAN, Scientific Specialist

JERRY ARENOVICH, Inorganics Manager

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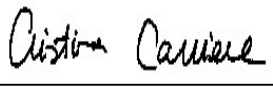
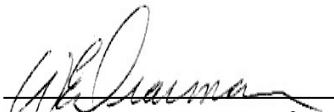
COLLEEN ACKER



CRISTINA CARRIERE, Scientific Services



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JERRY ARENOVICH, Inorganics Manager

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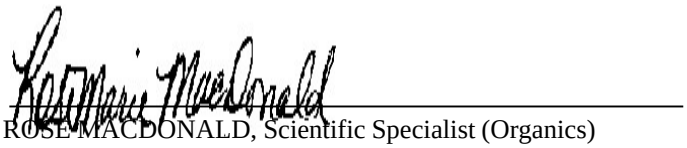

ROSE MACDONALD, Scientific Specialist (Organics)

==========

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Maxxam Analytics International Corporation
200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
49 Elizabeth Ave., St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
90 Esplanade Sydney, NS B1P 1A1 Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

MAXXAM Chain of Custody Record

COC #: B 081549 Page ____ of ____

This column for lab use only

Client Code: 19037

Maxxam Job #: B219012

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			4	4	4	

Integrity: YES (NO)

Integrity / Checklist by: WB

Labelled by

Location / Bin #: UP, 20

INVOICE INFORMATION:

Company Name: CBCL Ltd.
Contact Name: Colin LeFranc
Address: 187 Kenmount Rd.
St. John's, NL Postal Code: X
Email: colinl@cbcl.ca
Ph: 709-730-1832 Fax:

REPORT INFORMATION (if differs from invoice):

Company Name:
Contact Name:
Address:
Postal Code
Email:
Ph: Fax:

PO #
Project # / Phase #: 113080.00
Project Name / Site Location: Come by Chance Landfill
Quote
Site #
Task Order #
Sampled by: Colin LeFranc

TURNAROUND TIME

Standard ☑
10 day ☐
If RUSH Specify Date:
Pre-schedule rush work
Charge for # Jars used but not submitted

Guideline Requirements / Detection Limits / Special Instructions

Please report phosphates as P_2O_5
Lab filtration and preservation is required for samples.
Dissolved RCAp/MS for Samples.

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

	Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	Field Filtered & Preserved	Lab Filtration Required	RCAP-30 (Choose Total or Diss Metals)	RCAP-MS (Choose Total or Diss Metals)	Metals Water: Total Digest (Default Method) for well water, surface water	Metals Water: Dissolved for ground water	Metals Water: Mercury	Metals Soil: Metals & Mercury Default Available Digest Method	Metals Soil: Metals Total Digest - for Ocean sediments (HNO3/HF/HClO4)	Metals Soil: Mercury Low level by Cold Vapour AA	Metals Soil: Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural	Metals Soil: Hot Water soluble Boron (required for CCME Agricultural)	Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32)	Hydrocarbons: NS Fuel Hydrocarbons Soil (Potable), Oil Spill Policy Low Level BTEX, C6-C32	Hydrocarbons: NB Potable Water BTEX, VPH, Low level T.E.H.	Hydrocarbons: TPH Fractionation	Hydrocarbons: PAH's	Hydrocarbons: PAH's with Acridine, Quinoline	Grain Size PSA	Total Phenols	Sulphides	Chromium (Hexavalent)	TSS
RCP.	1 PLCS	Leachate	Feb 7/12			✓		✓			✓						✓				✓	✓	✓	✓	✓	✓	✓
	2 SLCS	Leachate	↓			✓		✓			✓						✓				✓	✓	✓	✓	✓	✓	✓
	3 Dup	Leachate	↓			✓		✓			✓						✓				✓	✓	✓	✓	✓	✓	✓
	4																										
	5																										
	6																										
	7																										
	8																										
	9																										
	10																										

SHIPPED FROM
Feb 8 2012
MAXXAM NL

TPH Must Done in NL

RELINQUISHED BY: (Signature/Print) Colin LeFranc Date: Feb 7/12 Time: 4:30p

RECEIVED BY: (Signature/Print) Date: 2012/02/7 Time: 4:35p

Your Project #: B219012
Your C.O.C. #: 08345238

Attention: BEDFORD SUBCONTRACT
MAXXAM ANALYTICS
200 BLUEWATER ROAD, SUITE 105
BEDFORD, NS
CANADA B4B 1G9

Report Date: 2012/02/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B211645
Received: 2012/02/11, 10:30

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chromium, Hexavalent	3	N/A	2012/02/16	BBY6SOP-00015	SM-3500Cr B

* Results relate only to the items tested.

Encryption Key

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

Sheleeza Mohamed, Burnaby Project Manager
Email: SMohamed@maxxam.ca
Phone# (604) 734 7276

==========

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Total cover pages: 1

Maxxam Job #: B211645
Report Date: 2012/02/20

MAXXAM ANALYTICS
Client Project #: B219012

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		CS0137	CS0138	CS0139		
Sampling Date		2012/02/07	2012/02/07	2012/02/07		
	Units	**PLCS (MM2602-07R)**	**SLCS (MM2603-07R)**	**DUP (MM2604-07R)**	**RDL**	**QC Batch**
Metals						
Hex. Chromium (Cr 6+)	mg/L	<0.0010	0.0047	0.0660	0.0010	5593567

RDL = Reportable Detection Limit

Maxxam Job #: B211645
Report Date: 2012/02/20

MAXXAM ANALYTICS
Client Project #: B219012

Package 1	9.3°C

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

General Comments

Maxxam Job #: B211645
Report Date: 2012/02/20

MAXXAM ANALYTICS
Client Project #: B219012

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
5593567	Hex. Chromium (Cr 6+)	2012/02/16	18(1, 2)	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20

N/A = Not Applicable
RPD = Relative Percent Difference
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(2) - Matrix spike exceeds acceptance limits due to matrix interference. Re-analysis yields similar results.

Validation Signature Page

Maxxam Job #: B211645

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

ROB REINERT, Data Validation Coordinator

==========

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Your Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Your C.O.C. #: B081617

Attention: Colin LeFrense
CBCL Limited
St. John's-Standing Offer
187 Kenmount Rd
St. John's, NL
A1B 3P9

Report Date: 2012/03/12

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B233740
Received: 2012/03/09, 09:57

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Volatile Organic Compounds in Water	2	2012/03/09	2012/03/09	ATL SOP 00122	Based on EPA624

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

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

Encryption Key

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

KERI MACKAY, Project Manager - Bedford
Email: kmackay@maxxam.ca
Phone# (902) 420-0203 Ext:294

==========

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Total cover pages: 1

Maxxam Job #: B233740
Report Date: 2012/03/12

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Sampler Initials: CL

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		MT4356	MT4357		
Sampling Date		2012/03/08	2012/03/08		
COC Number		B081617	B081617		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
Chlorobenzenes					
1,2-Dichlorobenzene	ug/L	ND	ND	0.50	2785071
1,3-Dichlorobenzene	ug/L	ND	ND	1.0	2785071
1,4-Dichlorobenzene	ug/L	ND	ND	1.0	2785071
Chlorobenzene	ug/L	ND	ND	1.0	2785071
Volatile Organics					
1,1,1-Trichloroethane	ug/L	ND	ND	1.0	2785071
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	1.0	2785071
1,1,2-Trichloroethane	ug/L	ND	ND	1.0	2785071
1,1-Dichloroethane	ug/L	ND	ND	2.0	2785071
1,1-Dichloroethylene	ug/L	ND	ND	0.50	2785071
1,2-Dichloroethane	ug/L	ND	ND	1.0	2785071
1,2-Dichloropropane	ug/L	ND	ND	1.0	2785071
Benzene	ug/L	ND	ND	1.0	2785071
Bromodichloromethane	ug/L	ND	ND	1.0	2785071
Bromoform	ug/L	ND	ND	1.0	2785071
Bromomethane	ug/L	ND	ND	3.0	2785071
Carbon Tetrachloride	ug/L	ND	ND	1.0	2785071
Chloroethane	ug/L	ND	ND	8.0	2785071
Chloroform	ug/L	ND	ND	1.0	2785071
Chloromethane	ug/L	ND	ND	8.0	2785071
cis-1,2-Dichloroethylene	ug/L	ND	ND	2.0	2785071
cis-1,3-Dichloropropene	ug/L	ND	ND	2.0	2785071
Dibromochloromethane	ug/L	ND	ND	1.0	2785071
Ethylbenzene	ug/L	ND	ND	1.0	2785071
Ethylene Dibromide	ug/L	ND	ND	1.0	2785071
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	3.0	2785071
o-Xylene	ug/L	ND	ND	1.0	2785071
p+m-Xylene	ug/L	ND	ND	2.0	2785071
Styrene	ug/L	ND	ND	1.0	2785071
Tetrachloroethylene	ug/L	ND	ND	1.0	2785071
Toluene	ug/L	ND	ND	1.0	2785071

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

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Maxxam Job #: B233740
Report Date: 2012/03/12

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Sampler Initials: CL

ATLANTIC VOC IN WATER (WATER)

Maxxam ID		MT4356	MT4357		
Sampling Date		2012/03/08	2012/03/08		
COC Number		B081617	B081617		
	Units	**PLCS**	**SLCS**	**RDL**	**QC Batch**
trans-1,2-Dichloroethylene	ug/L	ND	ND	2.0	2785071
trans-1,3-Dichloropropene	ug/L	ND	ND	1.0	2785071
Trichloroethylene	ug/L	ND	ND	1.0	2785071
Trichlorofluoromethane (FREON 11)	ug/L	ND	ND	8.0	2785071
Vinyl Chloride	ug/L	ND	ND	0.50	2785071
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	98	98		2785071
D4-1,2-Dichloroethane	%	98	98		2785071
D8-Toluene	%	100	99		2785071

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

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Maxxam Job #: B233740
Report Date: 2012/03/12

CBCL Limited
Client Project #: 113080.00
Site Location: COME BY CHANCE LANDFILL
Sampler Initials: CL

Package 1	7.5°C

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

GENERAL COMMENTS

Results relate only to the items tested.

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CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report

Maxxam Job Number: DB233740

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2785071	ASL	Matrix Spike	1,2-Dichlorobenzene	2012/03/09		105	%	70 - 130
			1,3-Dichlorobenzene	2012/03/09		105	%	70 - 130
			1,4-Dichlorobenzene	2012/03/09		105	%	70 - 130
			Chlorobenzene	2012/03/09		105	%	70 - 130
			1,1,1-Trichloroethane	2012/03/09		111	%	70 - 130
			1,1,2,2-Tetrachloroethane	2012/03/09		100	%	70 - 130
			1,1,2-Trichloroethane	2012/03/09		105	%	70 - 130
			1,1-Dichloroethane	2012/03/09		105	%	70 - 130
			1,1-Dichloroethylene	2012/03/09		116	%	70 - 130
			1,2-Dichloroethane	2012/03/09		105	%	70 - 130
			1,2-Dichloropropane	2012/03/09		105	%	70 - 130
			4-Bromofluorobenzene	2012/03/09		99	%	70 - 130
			Benzene	2012/03/09		111	%	70 - 130
			Bromodichloromethane	2012/03/09		102	%	70 - 130
			Bromoform	2012/03/09		95	%	70 - 130
			Bromomethane	2012/03/09		63 (1)	%	70 - 130
			Carbon Tetrachloride	2012/03/09		116	%	70 - 130
			Chloroethane	2012/03/09		105	%	70 - 130
			Chloroform	2012/03/09		NC	%	70 - 130
			Chloromethane	2012/03/09		105	%	70 - 130
			cis-1,2-Dichloroethylene	2012/03/09		105	%	70 - 130
			cis-1,3-Dichloropropene	2012/03/09		79	%	70 - 130
			D4-1,2-Dichloroethane	2012/03/09		97	%	70 - 130
			D8-Toluene	2012/03/09		100	%	70 - 130
			Dibromochloromethane	2012/03/09		103	%	70 - 130
			Ethylbenzene	2012/03/09		111	%	70 - 130
			Ethylene Dibromide	2012/03/09		110	%	70 - 130
			Methylene Chloride(Dichloromethane)	2012/03/09		105	%	70 - 130
			o-Xylene	2012/03/09		115	%	70 - 130
			p+m-Xylene	2012/03/09		115	%	70 - 130
			Styrene	2012/03/09		110	%	70 - 130
			Tetrachloroethylene	2012/03/09		121	%	70 - 130
			Toluene	2012/03/09		111	%	70 - 130
			trans-1,2-Dichloroethylene	2012/03/09		111	%	70 - 130
			trans-1,3-Dichloropropene	2012/03/09		100	%	70 - 130
			Trichloroethylene	2012/03/09		116	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2012/03/09		116	%	70 - 130
			Vinyl Chloride	2012/03/09		111	%	70 - 130
		Spiked Blank	1,2-Dichlorobenzene	2012/03/09		103	%	70 - 130
			1,3-Dichlorobenzene	2012/03/09		104	%	70 - 130
			1,4-Dichlorobenzene	2012/03/09		104	%	70 - 130
			Chlorobenzene	2012/03/09		106	%	70 - 130
			1,1,1-Trichloroethane	2012/03/09		112	%	70 - 130
			1,1,2,2-Tetrachloroethane	2012/03/09		98	%	70 - 130
			1,1,2-Trichloroethane	2012/03/09		106	%	70 - 130
			1,1-Dichloroethane	2012/03/09		107	%	70 - 130
			1,1-Dichloroethylene	2012/03/09		116	%	70 - 130
			1,2-Dichloroethane	2012/03/09		102	%	70 - 130
			1,2-Dichloropropane	2012/03/09		102	%	70 - 130
			4-Bromofluorobenzene	2012/03/09		100	%	70 - 130
			Benzene	2012/03/09		110	%	70 - 130
			Bromodichloromethane	2012/03/09		99	%	70 - 130
			Bromoform	2012/03/09		97	%	70 - 130
			Bromomethane	2012/03/09		99	%	70 - 130
			Carbon Tetrachloride	2012/03/09		114	%	70 - 130

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CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB233740

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2785071	ASL	Spiked Blank	Chloroethane	2012/03/09		107	%	70 - 130
			Chloroform	2012/03/09		106	%	70 - 130
			Chloromethane	2012/03/09		111	%	70 - 130
			cis-1,2-Dichloroethylene	2012/03/09		106	%	70 - 130
			cis-1,3-Dichloropropene	2012/03/09		106	%	70 - 130
			D4-1,2-Dichloroethane	2012/03/09		98	%	70 - 130
			D8-Toluene	2012/03/09		100	%	70 - 130
			Dibromochloromethane	2012/03/09		101	%	70 - 130
			Ethylbenzene	2012/03/09		110	%	70 - 130
			Ethylene Dibromide	2012/03/09		107	%	70 - 130
			Methylene Chloride(Dichloromethane)	2012/03/09		106	%	70 - 130
			o-Xylene	2012/03/09		112	%	70 - 130
			p+m-Xylene	2012/03/09		112	%	70 - 130
			Styrene	2012/03/09		111	%	70 - 130
			Tetrachloroethylene	2012/03/09		118	%	70 - 130
			Toluene	2012/03/09		109	%	70 - 130
			trans-1,2-Dichloroethylene	2012/03/09		111	%	70 - 130
			trans-1,3-Dichloropropene	2012/03/09		107	%	70 - 130
			Trichloroethylene	2012/03/09		113	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2012/03/09		114	%	70 - 130
			Vinyl Chloride	2012/03/09		114	%	70 - 130
		Method Blank	1,2-Dichlorobenzene	2012/03/09	ND, RDL=0.50		ug/L	
			1,3-Dichlorobenzene	2012/03/09	ND, RDL=1.0		ug/L	
			1,4-Dichlorobenzene	2012/03/09	ND, RDL=1.0		ug/L	
			Chlorobenzene	2012/03/09	ND, RDL=1.0		ug/L	
			1,1,1-Trichloroethane	2012/03/09	ND, RDL=1.0		ug/L	
			1,1,2,2-Tetrachloroethane	2012/03/09	ND, RDL=1.0		ug/L	
			1,1,2-Trichloroethane	2012/03/09	ND, RDL=1.0		ug/L	
			1,1-Dichloroethane	2012/03/09	ND, RDL=2.0		ug/L	
			1,1-Dichloroethylene	2012/03/09	ND, RDL=0.50		ug/L	
			1,2-Dichloroethane	2012/03/09	ND, RDL=1.0		ug/L	
			1,2-Dichloropropane	2012/03/09	ND, RDL=1.0		ug/L	
			4-Bromofluorobenzene	2012/03/09		100	%	70 - 130
			Benzene	2012/03/09	ND, RDL=1.0		ug/L	
			Bromodichloromethane	2012/03/09	ND, RDL=1.0		ug/L	
			Bromoform	2012/03/09	ND, RDL=1.0		ug/L	
			Bromomethane	2012/03/09	ND, RDL=3.0		ug/L	
			Carbon Tetrachloride	2012/03/09	ND, RDL=1.0		ug/L	
			Chloroethane	2012/03/09	ND, RDL=8.0		ug/L	
			Chloroform	2012/03/09	ND, RDL=1.0		ug/L	
			Chloromethane	2012/03/09	ND, RDL=8.0		ug/L	
			cis-1,2-Dichloroethylene	2012/03/09	ND, RDL=2.0		ug/L	
			cis-1,3-Dichloropropene	2012/03/09	ND, RDL=2.0		ug/L	
			D4-1,2-Dichloroethane	2012/03/09		99	%	70 - 130
			D8-Toluene	2012/03/09		100	%	70 - 130
			Dibromochloromethane	2012/03/09	ND, RDL=1.0		ug/L	
			Ethylbenzene	2012/03/09	ND, RDL=1.0		ug/L	
			Ethylene Dibromide	2012/03/09	ND, RDL=1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2012/03/09	ND, RDL=3.0		ug/L	
			o-Xylene	2012/03/09	ND, RDL=1.0		ug/L	
			p+m-Xylene	2012/03/09	ND, RDL=2.0		ug/L	
			Styrene	2012/03/09	ND, RDL=1.0		ug/L	
			Tetrachloroethylene	2012/03/09	ND, RDL=1.0		ug/L	
			Toluene	2012/03/09	ND, RDL=1.0		ug/L	
			trans-1,2-Dichloroethylene	2012/03/09	ND, RDL=2.0		ug/L	

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CBCL Limited
Attention: Colin LeFrense
Client Project #: 113080.00
P.O. #:
Site Location: COME BY CHANCE LANDFILL

Quality Assurance Report (Continued)

Maxxam Job Number: DB233740

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2785071	ASL	Method Blank	trans-1,3-Dichloropropene	2012/03/09	ND, RDL=1.0		ug/L	
			Trichloroethylene	2012/03/09	ND, RDL=1.0		ug/L	
			Trichlorofluoromethane (FREON 11)	2012/03/09	ND, RDL=8.0		ug/L	
			Vinyl Chloride	2012/03/09	ND, RDL=0.50		ug/L	
		RPD	Bromodichloromethane	2012/03/09	1.7		%	40
			Bromoform	2012/03/09	NC		%	40
			Chloroform	2012/03/09	2.0		%	40
			Dibromochloromethane	2012/03/09	NC		%	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) Matrix Spike: < 10 % of compounds in multi-component analysis in violation.

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel:902-420-0203 Toll-free:800-565-7227 Fax:902-420-8612 www.maxxamanalytics.com

Validation Signature Page

Maxxam Job #: B233740

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

ROSE MACDONALD, Scientific Specialist (Organics)

==========

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.

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Maxxam Analytics International Corporation

200 Bluewater Road, Suite 105, Bedford, Nova Scotia B4B 1G9 Tel: 902-420-0203 Fax: 902-420-8612 Toll Free: 1-800-565-7227
49 Elizabeth Ave., St John's, NL A1A 1W9 Tel: 709-754-0203 Fax: 709-754-8612 Toll Free: 1-888-492-7227
90 Esplanade Sydney, NS B1P 1A1 Tel: 902-567-1255 Fax: 902-539-6504 Toll Free: 1-888-535-7770
www.maxxamanalytics.com E-mail: Clientservicesbedford@maxxamanalytics.com

MAXXAM Chain of Custody Record

COC #: B 081617 Page 1 of 1

This column for lab use only:
Client Code: 19037
Maxxam Job #: B233740

Cooler ID	Seal Present	Seal Intact	Temp 1	Temp 2	Temp 3	Average Temp
			7.5	7.5	7.5	

Integrity: YES / NO (NO circled)
Integrity / Checklist by: MB
Labelled by:
Location / Bin #: EF

INVOICE INFORMATION:
Company Name: CBCL Ltd.
Contact Name: Colin LeFrenn
Address: 187 Kenmount Rd.
Postal Code: A
Email: colinl@cbcl.ca
Ph: 709-364-8623 Fax:

REPORT INFORMATION (if differs from invoice):
Company Name:
Contact Name:
Address:
Postal Code:
Email:
Ph: Fax:

PO #:
Project # / Phase #: 113080.00
Project Name / Site Location: Come by Chance Landfill
Quote:
Site #:
Task Order #:
Sampled by: Colin LeFrenn

TURNAROUND TIME
Standard ☐
10 day ☐
If RUSH Specify Date: Mar 12/02
Pre-schedule rush work
Charge for # Jars used but not submitted

Guideline Requirements / Detection Limits / Special Instructions

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

Analysis columns: Field Filtered & Preserved; Lab Filtration Required; RCAP-30 (Choose Total or Diss Metals); RCAP-MS (Choose Total or Diss Metals); Metals Water: Total Digest (Default Method) for well water, surface water; Dissolved for ground water; Mercury; Metals Soil: Metals & Mercury Default Available Digest Method; Metals Total Digest - for Ocean sediments (HNO3/HF/HCLO4); Mercury Low level by Cold Vapour AA; Selenium (low level) Req'd for CCME Residential, Parklands, Agricultural; Hot Water soluble Boron (required for CCME Agricultural); Hydrocarbons: RBCA Hydrocarbons (BTEX, C6-C32); Hydrocarbons Soil (Potable), NS Fuel Oil Spill Policy Low Level BTEX, C6-C32; NB Potable Water BTEX, VPH, Low level T.E.H.; TPH Fractionation; PAH's; PAH's with Acridine, Quinoline; VOC's

#	Field Sample Identification	Matrix*	Date/Time Sampled	# & type of bottles	VOC's
1	PLCS	water (leachate)	Mar 8/02	3x50ml	
2	SLCS	↓		↓	
3					
4					
5					
6					
7					
8					
9					
10					

2012 MAR 9 AM 9:57

RELINQUISHED BY: (Signature/Print)	Date	Time	RECEIVED BY: (Signature/Print)	Date	Time
[signature]	Mar 8/02		SHIPPED FROM [signature]	2012/03/08	3:15PM
			[signature] Mandy Bouman		

White: Maxxam Yellow: Mail Pink: Client

ATL FCD 00149 / Revision 10

Stantec Consulting Ltd
Science Laboratory
422 Logy Bay Road
St. John's, NL A1A 5C6
Tel: (709) 576-4804
Fax: (709) 576-0008

Registered to ISO 9001:2000
ISO/IEC 17025:2005 Accredited
SCC-Food Scope (No. 268)
CALA – Environmental Scope (No. 2709)

Stantec

February 15, 2012
Project: 10931.
Lab Refer No.: B-2808-09

Report No.: 04203

CBCL
187 Kenmount Road
St. John's, NL
A1B 3P9
Tel: (709) 364-8623
Fax: (709) 364-8627

Attention: **Colin LeFrense**

Dear Mr. LeFrense

Reference: **Toxicology Testing Results**

Please find enclosed the results of the 96 hour bioassay conducted February 8 - 12, 2012. The toxicity test was performed on the SLCS - Come by Chance Landfill. The effluent was collected on February 7, 2012. The sample was received in an acceptable condition.

Test conditions for a single concentration test were followed according to the Reference Method: For Determining Acute Lethality of Effluents to Rainbow Trout (Report EPS 1/RM/13 Second Edition-December 2000 and May 2007 amendment). All test parameters were maintained within the recommended levels outlined in the above protocol.

The SLCS - Come by Chance Landfill is not acutely lethal to the fish, since less than 50.00 % of the fish died in the 100.00 % effluent during the 96 hour period. The LT50 was determined to be greater than 96 hours.

Please call if you have any questions regarding these results.

Sincerely,

STANTEC CONSULTING LTD

Dianne Hunt-Hall, M.Env., B.Tech
Laboratory Supervisor, Science Laboratory

Attachments:

A- Bench Data Sheet(s)

Reference: Toxicology Testing Results

SAMPLE

Lab Refer.No.:	B-2808-09
Company:	CBCL
Sample Material:	SLCS - Come by Chance Landfill
Sampling Method:	Grab
Sample Condition:	Received in acceptable condition
Collected:	February 7, 2012; 12:00 pm
Collected By:	C. LeFrense

SAMPLE CHARACTERIZATION

Received (Date and Time):	February 7, 2012; 4:05 pm
Volume:	1 x 20 L
Temperature:	15.7 °C
Dissolved Oxygen:	8.2 mg/L
pH:	6.9 pH units
Conductivity:	1017 µS/cm
Colour:	Cloudy, orange
Odour:	None
Storage:	Overnight @ 15.0 ± 1.0 °C

DILUTION WATER CHARACTERIZATION (MONTHLY AVERAGE)

Source:	St. John's Dechlorinated
Dissolved Oxygen:	9.8 ± 0.2 mg/L
Conductivity:	143 ± 13 µS/cm
Hardness:	19 ± 3 mg/L
pH:	7.5 ± 0.1 pH units
Date Revised:	February 14, 2012

TEST CONDITIONS

Started (Date and Time):	February 8, 2012; 12:35 pm
Ended (Date and Time):	February 12, 2012; 10:35 am
Type of Test:	96 hour static LT_{50} (Pass/Fail)
Volume of Test Solutions:	20 Litres
Photoperiod:	16h Light/08h Dark
Light Intensity:	417 Lux
Aeration Rate:	6.5 ± 1.0 mL/min.L^{-1}
Preaeration Time:	30 mins
Test Temperature:	15 ± 1 °C
Duration:	96 hours

TEST ORGANISM

Species:	Rainbow Trout (*Oncorhynchus mykiss*)		
Source:	Rainbow Springs Hatchery		
Batch Number:	11-14		
Number per Tank:	10		
% Mortality:	0.74 % (7 days prior to testing)		
Mean Fork Length (cm):	3.8 ± 0.2	Range (cm):	4.0 – 4.7
Mean Total Weight (g):	0.7 ± 0.2	Range (g):	0.5 – 1.0
Loading Density:	0.4 g/L		

Reference: Toxicology Testing Results

TEST RESULTS

Lab Refer No.:	B-2808-09
Sample Material:	SLCS - Come by Chance Landfill
Collection Date:	February 7, 2012; 12:00 pm
Protocol:	EPS 1/RM/13
Test Type:	LT_{50} (Pass/Fail)
LT_{50} value (static, acute):	> 96 hours
95% Confidence Intervals:	N/A

Effluent Conc.(%)	Temp(°C)		D.O. (mg/L)		pH (units)		Cond.(µs/cm)		Mortality
	Init.	Final	Init.	Final	Init.	Final	Init.	Final	(%)
100	15.0	15.5	8.7	9.9	6.9	8.3	1018	603	0
0	14.7	15.1	9.8	9.8	7.6	7.5	150	143	0

COMMENTS:

- Arrival temperature of 4.6°C.
- The sample contained small suspended particles that settled during the bioassay.
- Samples have not been pH adjusted or filtered.
- The above analysis was conducted according to protocols indicated. The above results, which refer to the sample(s) tested only, are for your information and will be held in the strictest of confidence by this firm.
- Sample controls are considered a part of a sample test and as such are subject to the same treatment. (This includes, but is not limited to, aeration and temperature testing requirements.)

REFERENCE TOXICITY TEST DATA (LOG SCALE)

Test Organism:	*Oncorhynchus mykiss*
Toxicant:	Phenol
Fish Batch No.:	11-14
Reference Toxicant Date:	January 30 – February 3, 2012
LC_{50} Value:	0.90 mg/L
95% Confidence Limits:	0.70 – 1.18 mg/L
Historic Mean ± 2 SD (Warning Limits):	0.98 ± 0.16 mg/L

Performed by: Lana Combdon/Amanda Woodrow

Technical Reviewer: Suzette Winter
(Print Name/Signature)

Senior Reviewer: Dianne Hunt-Hall
(Print Name/Signature) Date: Feb. 22/12

Reference: Toxicology Testing Results

ATTACHMENT A

Bench Data Sheet (s)

Jacques Whitford Environment Limited
Laboratory Division

JWEL Lab Form:	Bio-0011
Date:	May 30, 2003

LT50 Fish Bioassay Data Sheet

Client: CBCL
~~Kelly MacDougall~~ Colin Lefrense (initialled)
187 Kenmount Road
St. John's, NL
A1B 3P9
(709) 364-8623
(709) 364-8627

Sample ID # B-2807-09
Client # ~~10932~~ 10931 9A022212

Light Intensity: 431 lux
Ammonia (Init.): NA
Ammonia (Fin.): ↓

Sample Material: PLCS - Come by Chance Landfill
Start Date: 020812
Finish Date: 021212
Date Collected: 020712 Time Collected: 12:00
Date Received: 020712 Time Received: 4:05

Preaeration Time: 30 min.
Test Org - Batch #: 11-14
Source: RSH
Test Start Date: 020812
Test Start Time: 12:40

Clarity (I): Cloudy
Colour (I): yellow
Odour (I): none
Susp. Part. (I): Small parts. throughout
Other (I): Arrival temp @ 4.6°C Collected by CL.

Aeration Rate: 6.5 ± mL/min. L-1
Conc: 100%
Salinity: 0.3ppt
Conc: 0%
Salinity:
Volume: 1x20 Litres
Storage: Tempered in 15°C waterbath overnight

Time	Day	Monit By	HR.	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (µS/cm)	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (uS/cm)
12:10	020812	LC	INT	–	15.2	9.2	7.3	605					
12:40	↓	↓	0	–	14.8	9.4	7.5	600		~~14.7~~	~~9.8~~	7.6	140
10:20	020912	AW	24	–	14.8	9.5	7.5	587	–	14.8	9.8	7.6	140
9:35	021012	AW	48	–	14.3	9.4	7.4	~~590~~ 5?? AW 021012	–	14.8	9.8	7.5	139
10:35	021112	LC	72	–	14.5	9.5	7.7	580	–	15.0	9.8	7.5	141
10:50	021212	LC	96	–	14.7	9.7	8.4	574	–	15.0	9.8	7.6	141

Fish Measurements

Fork Length (cm)	Wet Weight (g)
4.4	0.8
4.7	1.1
4.7	1.1
3.9	0.6
4.0	0.5
4.8	1.1
4.3	0.7
3.9	0.5
3.9	0.6
4.0	0.6

Mean +/- SD

3.86	0.38	0.76	0.75

Loading Density (g/l): 0.38
LT50: > 96 hrs

Fish Behaviour Comments All fish alive @ 96 hrs w/ normal behaviours →

Pretreatment: Composite ☐ Temp ☑ Other ☐
Dissolved Oxygen ☐ Water Hardness ☐

Clarity (F): clear
Colour (F): yellow
Odour (F): none
Susp. Part. (F): settled
Other (F): —

Comments EPS1 / RM / 13 Second Edition - December 2000

Stantec Consulting Ltd
Science Laboratory
422 Logy Bay Road
St. John's, NL A1A 5C6
Tel: (709) 576-4804
Fax: (709) 576-0008

Registered to ISO 9001:2000
ISO/IEC 17025:2005 Accredited
SCC-Food Scope (No. 268)
CALA – Environmental Scope (No. 2709)

Stantec

February 15, 2012
Project: 10931.
Lab Refer No.: B-2807-09

Report No.: 04204

CBCL
187 Kenmount Road
St. John's, NL
A1B 3P9
Tel: (709) 364-8623
Fax: (709) 364-8627

Attention: Colin LeFrense

Dear Mr. LeFrense

Reference: Toxicology Testing Results

Please find enclosed the results of the 96 hour bioassay conducted February 8 - 12, 2012. The toxicity test was performed on the PLCS - Come by Chance Landfill. The effluent was collected on February 7, 2012. The sample was received in an acceptable condition.

Test conditions for a single concentration test were followed according to the Reference Method: For Determining Acute Lethality of Effluents to Rainbow Trout (Report EPS 1/RM/13 Second Edition-December 2000 and May 2007 amendment). All test parameters were maintained within the recommended levels outlined in the above protocol.

The PLCS - Come by Chance Landfill is not acutely lethal to the fish, since less than 50.00 % of the fish died in the 100.00 % effluent during the 96 hour period. The LT50 was determined to be greater than 96 hours.

Please call if you have any questions regarding these results.

Sincerely,

STANTEC CONSULTING LTD

Dianne Hunt-Hall, M.Env., B.Tech
Laboratory Supervisor, Science Laboratory

Attachments:

A- Bench Data Sheet(s)

Reference: Toxicology Testing Results

SAMPLE

Lab Refer.No.:	B-2807-09
Company:	CBCL
Sample Material:	PLCS - Come by Chance Landfill
Sampling Method:	Grab
Sample Condition:	Received in acceptable condition
Collected:	February 7, 2012; 12:00 pm
Collected By:	C. LeFrense

SAMPLE CHARACTERIZATION

Received (Date and Time):	February 7, 2012; 4:05 pm
Volume:	1 x 20 L
Temperature:	15.2 °C
Dissolved Oxygen:	9.2 mg/L
pH:	7.3 pH units
Conductivity:	605 µS/cm
Colour:	Cloudy, yellow
Odour:	None
Storage:	Overnight @ 15.0 ± 1.0 °C

DILUTION WATER CHARACTERIZATION (MONTHLY AVERAGE)

Source:	St. John's Dechlorinated
Dissolved Oxygen:	9.8 ± 0.2 mg/L
Conductivity:	143 ± 13 µS/cm
Hardness:	19 ± 3 mg/L
pH:	7.5 ± 0.1 pH units
Date Revised:	February 14, 2012

TEST CONDITIONS

Started (Date and Time):	February 8, 2012; 12:40 pm
Ended (Date and Time):	February 12, 2012; 10:50 am
Type of Test:	96 hour static LT_{50} (Pass/Fail)
Volume of Test Solutions:	20 Litres
Photoperiod:	16h Light/08h Dark
Light Intensity:	431 Lux
Aeration Rate:	6.5 ± 1.0 mL/min.L^{-1}
Preaeration Time:	30 mins
Test Temperature:	15 ± 1 °C
Duration:	96 hours

TEST ORGANISM

Species:	Rainbow Trout (*Oncorhynchus mykiss*)		
Source:	Rainbow Springs Hatchery		
Batch Number:	11-14		
Number per Tank:	10		
% Mortality:	0.74 % (7 days prior to testing)		
Mean Fork Length (cm):	3.9 ± 0.4	Range (cm):	3.9 – 4.8
Mean Total Weight (g):	0.8 ± 0.3	Range (g):	0.5 – 1.1
Loading Density:	0.4 g/L		

Reference: Toxicology Testing Results

TEST RESULTS

Lab Refer No.:	B-2807-09
Sample Material:	PLCS - Come by Chance Landfill
Collection Date:	February 7, 2012; 12:00 pm
Protocol:	EPS 1/RM/13
Test Type:	LT_{50} (Pass/Fail)
LT_{50} value (static, acute):	> 96 hours
95% Confidence Intervals:	N/A

Effluent Conc.(%)	Temp(°C)		D.O. (mg/L)		pH (units)		Cond.(µs/cm)		Mortality
	Init.	Final	Init.	Final	Init.	Final	Init.	Final	(%)
100	14.8	14.7	9.4	9.7	7.5	8.4	600	574	0
0	14.7	15.0	9.8	9.8	7.6	7.6	140	141	0

COMMENTS:

- Arrival temperature of 4.6°C.
- The sample contained small suspended particles that settled during the bioassay.
- Samples have not been pH adjusted or filtered.
- The above analysis was conducted according to protocols indicated. The above results, which refer to the sample(s) tested only, are for your information and will be held in the strictest of confidence by this firm.
- Sample controls are considered a part of a sample test and as such are subject to the same treatment. (This includes, but is not limited to, aeration and temperature testing requirements.)

REFERENCE TOXICITY TEST DATA (LOG SCALE)

Test Organism:	*Oncorhynchus mykiss*
Toxicant:	Phenol
Fish Batch No.:	11-14
Reference Toxicant Date:	January 30 – February 3, 2012
LC_{50} Value:	0.90 mg/L
95% Confidence Limits:	0.70 – 1.18 mg/L
Historic Mean ± 2 SD (Warning Limits):	0.98 ± 0.16 mg/L

Performed by: Lana Combdon/Amanda Woodrow

Technical Reviewer: Suzette Winter
(Print Name/Signature)

Senior Reviewer: Dianne Hunt-Hall
(Print Name/Signature) Date: Feb. 22/12

ATTACHMENT A

Bench Data Sheet (s)

Jacques Whitford Environment Limited Laboratory Division	JWEL Lab Form: Bio-0011 Date: May 30, 2003

LT50 Fish Bioassay Data Sheet

Client: CBCL
~~Kelly MacDougall~~ Colin Lefevre
187 Kenmount Road
St. John's, NL
A1B 3P9
(709) 364-8623
(709) 364-8627

Sample ID # B-2808-09
Client # ~~10932~~ 10931 ~~10022212~~

Light Intensity: 417 lux
Ammonia (Init.): NA
Ammonia (Fin.): ↓

Sample Material: SLCS - Come by Chance Landfill
Start Date: 020812
Finish Date: 020912
Date Collected: 020712 Time Collected: 12:00
Date Received: 020712 Time Received: 4:05

Preaeration Time: 30 min.
Test Org - Batch #: 11-14
Source: RSH
Test Start Date: 020812
Test Start Time: 12:35

Clarity (I): cloudy
Colour (I): orange
Odour (I): none
Susp. Part. (I): small parts throughout
Other (I): Arrival temp @ 4.6°C. Collected by C.L.

Aeration Rate: 6.5 ± mL/min. L-1

Conc:
Salinity: 0.5 ppt 100 1.

Conc:
Salinity: 0 1.

Volume: 1 X 20L Litres
Storage: Tempered in 15L waterbath.

Time	Day	Monit By	HR.	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (µS/cm)	Mort #	Temp (°C)	DO (mg/l)	pH	Cond (uS/cm)
12:05	020812	LC	INT	—	15.7	8.2	6.9	107					
12:35	↓	↓	0	—	15.0	8.7	6.9	1018	—	14.7	9.8	7.6	150
9:40	020912	AW	24	—	14.8	9.8	8.2	388	—	14.7	9.8	7.6	150
8:55	021012	AW	48	—	14.8	9.8	8.3	747	—	14.7	9.8	7.4	149
16:30	021112	LC	72	—	15.0	9.8	8.2	649	—	14.8	9.8	7.5	141
10:35	021212	LC	96	—	15.5	9.9	8.3	603	—	15.1	9.8	7.5	143

Fish Behaviour Comments
All fish alive @ 96 hrs w/ normal behaviour →

Fish Measurements

Fork Length (cm)	Wet Weight (g)
4.3	0.5
4.2	0.6
4.4	0.8
4.7	~~0.9~~ @ 1.0
4.0	0.6
4.0	0.8
4.4	0.9
4.0	0.6
4.1	0.7
4.3	0.7

Mean +/- SD

3.81	0.74	6.77	0.15

Loading Density (g/l): 0.36

LT50: >96hrs

Pretreatment: Composite ☐ Temp ☑ Other ☐
Dissolved Oxygen ☑ Water Hardness ☐

Comments EPS1 / RM / 13 Second Edition - December 2000

Clarity (F): Clear
Colour (F): orange
Odour (F): none
Susp. Part. (F): settled.
Other (F): —