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Kitik-07 – Report for the 2011 Collection of Landfill Monitoring Data at the PIN-3 Lady Franklin Point DEW Line Site, Nunavut



A07001A02.730





January 13, 2012

Defence Construction Canada
National Defence Headquarters
101 Colonel By Drive
Ottawa, ON K1A 0K2

Mr. Nahed Farah
Director General Military Engineering

Dear Mr. Farah:

Kitik-07 – Final Report for the 2011 Collection of Landfill Monitoring Data at the PIN-3 Lady Franklin Point DEW Line Site, Nunavut

We are pleased to submit eight hard copies of the 2011 Final Report on the Collection of Landfill Monitoring Data at the PIN-3 Lady Franklin Point DEW Line Site (PIN-3 site) in Nunavut. This report documents the data collected from our site visit to the PIN-3 site on August 24 and 25, 2011. In addition to the eight hard copy final reports, we have also attached digital copies of the files and photos on three CDs. The contents of the CDs are as follows:

1. all landfill drawings submitted in AutoCAD format;
2. raw thermistor data;
3. all text files submitted in Microsoft Word format;
4. all analytical data tables in Microsoft Excel format;
5. all digital photographic records of the geotechnical inspection, soil sample locations, condition of the monitoring wells, and thermistors in jpeg format; and
6. photographic logs in Microsoft Excel tables.

If you have any questions or comments concerning this report, please contact Chris Langton at (403)-730-6830 or clangton@klohn.com.

Yours truly,

IEG NUNASI CONSULTANTS LTD.

Chris Langton, P. Geol.
Project Manager

120113 2011 PIN-3 DEW Line Monitoring
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DISCLAIMER

This report is an instrument of service of IEG Nunasi Consultants Ltd. (IEG). This report was prepared by IEG for the account of Kitnuna Projects (Kitnuna) and Defence Construction Canada (DCC). The material in it reflects IEG's best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. IEG accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

In performing this study, IEG has endeavoured to observe that degree of care and skill generally exercised by other consultants undertaking similar studies under similar circumstances and conditions, and in the same geographical area. The report's findings are based on conditions that existed at the time of IEG's site visits as described in this report and should not be relied upon to precisely represent conditions at any other time. Be aware that conditions may change at any sampled or unsampled location as a function of time in response to natural conditions, chemical reactions, and/or other events.

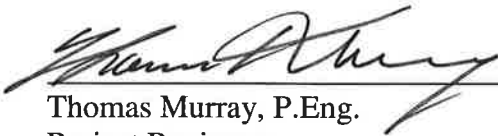
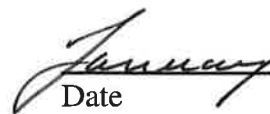

Chris Langton, P.Geol.
Project Manager
January 11, 2012
Date
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Project Reviewer
January 11, 2012
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1. INTRODUCTION

The Department of National Defence (DND) in co-operation with Nunavut Tunngavik Incorporated (NTI) has developed a Landfill Monitoring Plan to address post-closure monitoring requirements for the landfills at the Distant Early Warning (DEW) Line sites. Defence Construction Canada (DCC) is managing the clean-up and monitoring programs on behalf of DND. Kitnuna Projects (Kitnuna) currently has a contract to provide services for the collection of landfill monitoring data at the PIN-3 Lady Franklin Point DEW Line site (PIN-3 site) in the Nunavut Settlement Area for 2011. Kitnuna retained IEG Consultants Ltd. (IEG) to collect the 2011 monitoring data. This report provides the procedures and the results for interpretation on the monitoring completed in 2011.

The report is divided into a general report section describing the background of the environmental monitoring program and into specific sections for each of the individual landfills assessed in 2011. Each of the landfill specific sections appears in individual appendices detailing the monitoring results at the respective landfill.

2. BACKGROUND

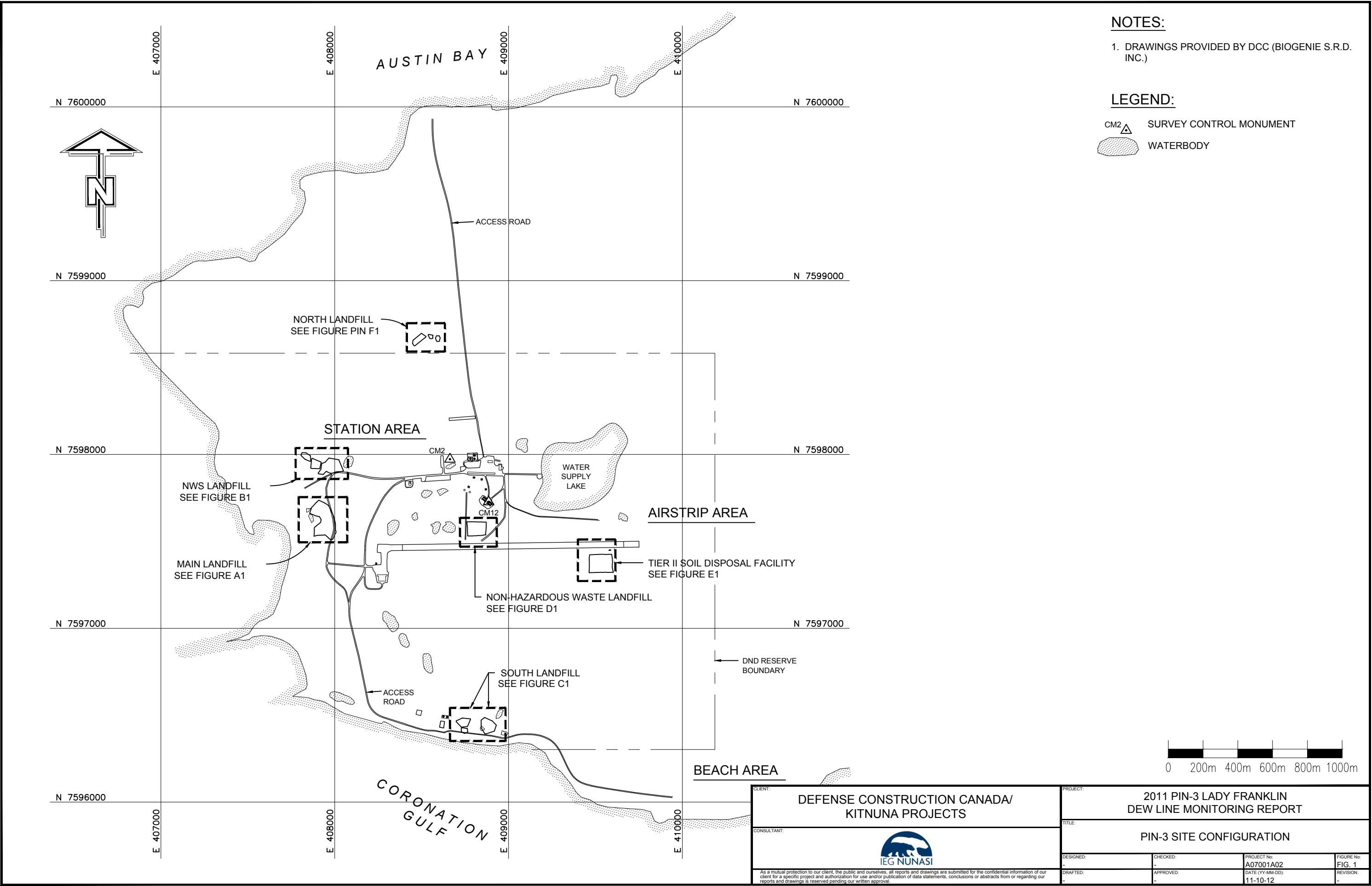
The PIN-3 site is located on the west side of Victoria Island at 68° 28' north latitude and 113° 13' west longitude. The community of Cambridge Bay is located approximately 325 km southeast of the site and the community of Kugluktuk is located approximately 115 km southwest of the site. Access to the site is via charter aircraft or helicopter. In 2011, the runway was in good condition.

The PIN-3 site is a former auxiliary radar site on the DEW Line, and was constructed and operated by a civilian contractor for the United States Air Force (U.S.A.F.) until 1991. As part of the North American Aerospace Defence Modernization Program, the PIN-3 site was decommissioned in 2004 and is now an operational Long Range Radar (LRR) site as part of the North Warning System (NWS).

The clean-up of the PIN-3 site included the closure and remediation of five existing landfills as well as the construction of a landfill for the disposal of non-hazardous demolition and site debris. A DCC Tier II soil disposal facility for the disposal of contaminated soil was also constructed at the site. The seven landfills are identified as:

- a) Main Landfill;
- b) NWS Landfill;
- c) South Landfill - West;
- d) South Landfill - East;
- e) Non-Hazardous Waste Landfill;
- f) Tier II Soil Disposal Facility; and,
- g) North Landfill.

The locations of the various landfills are shown on Figure 1. Access to the landfills was gained through on-site roads. Baseline monitoring of the landfills took place in 2000, 2001, and 2003. Post-remediation monitoring commenced in 2005 and occurred annually until 2009. The 2011 monitoring event represents the sixth post-remediation monitoring at the PIN-3 site. There are three remaining monitoring events to be conducted in 2014, 2019 and 2029. The 2011 monitoring data was compared to the 2005 monitoring data, which was the latest data set provided to IEG by Kitnuna.



2.1 Project Objectives

The objective of the landfill monitoring program is to collect sufficient information to assess the performance of the landfills from a geotechnical and environmental perspective. The landfill monitoring plan specified the requirements for the visual inspection as well as the chemical and thermal monitoring of the landfills. The long term monitoring plan consists of visual monitoring for signs of settlement and erosion, collection of soil and groundwater samples to evaluate the effectiveness of the leachate containment system, and monitoring of the sub-surface ground temperatures within the main body of select “freeze-back” design landfills.

2.2 2011 Monitoring Event

On August 24 and August 25, 2011, the field data collection event was conducted at the PIN-3 site by IEG personnel. The monitoring event consisted of visual inspections, soil sampling, groundwater sampling, and thermal monitoring of the landfills at designated locations. The landfill monitoring requirements as outlined in the Terms of Reference (TOR) are displayed in Table 1 below.

Table 1 Summary of Landfill Monitoring Requirements for 2011

Landfill Designation	Visual Inspection	Soil Sampling	Groundwater Sampling	Thermal Monitoring
<i>PIN-3 Site</i>				
Main Landfill	√	√	√	√
NWS Landfill	√	√		
South Landfill – West	√	√		
South Landfill – East	√	√		
Non-Hazardous Waste Landfill	√	√	√	
Tier II Soil Disposal Facility	√	√	√	√
North Landfill	√	√		

2.2.1 Visual Inspection

At each of the landfills listed in Table 1, a visual inspection was conducted for conditions specified in the checklist included in the TOR. Observations are documented and photographic records are included for each landfill separately in Appendices A through F.

The inspection was performed in a systematic way; first walking around the perimeter of the landfill near the toe of the slope, then around the perimeter of the cap, and then crisscrossing the surface cap, identifying items listed in the checklist, if present:

- Settlement – Depressions were identified as a settlement. Depressions were recorded as areas and the depth relative to surrounding grade was noted;
- Erosion – Erosion features previously observed at the landfills were usually erosion gullies or washes located on slopes of the landfill. Most erosion features found at the landfills in 2005 were identified in 2011 as likely resulting from boulders scouring the ground surface and not erosion gullies or washes. The location, length, width, and depth were recorded in the landfill observation log;
- Frost Action – Frost action is identified as elevated areas within the cap of the landfill (frost jacking), frost cracks, and frost heaving of monitoring equipment, particularly monitoring wells. No frost action was identified in 2011;
- Animal Burrows – No animal burrows were identified in 2011;
- Vegetation – The general state of vegetative regrowth was noted for each of the landfills. Minor small weeds and slight growth in some areas were identified;
- Staining – The locations and extent of iron oxide staining, oil staining, and petroleum hydrocarbon (PHC) sheen were recorded in the landfill observation log;
- Vegetation Stress – No vegetation stress, as indicated by discoloured, dead, defoliated vegetation, areas void of vegetation, or lush weed growth were noted in 2011;

- Seepage Points – Seepage points typified by ponding water were identified surrounding two of the landfills;
- Debris Exposed – Rusted metal was identified at one of the landfills. The location, length, and width of the debris were noted;
- Condition of Monitoring Instruments – Monitoring wells and thermistors were inspected for damage such as heaving, missing caps, signs of surface water infiltration, cracked casings, disconnected wiring, and missing or damaged locks. This information is included in the landfill inspection log. Where possible, the damage was repaired during the site visit; and,
- Other features of note not included in the categories above (i.e. ponded water) were recorded in the log.

Each feature was assigned a letter to identify the observation. The feature letter is intended to be kept consistent between monitoring events to ensure that subtle changes in each feature can be monitored. The letter is shown on the figures for each landfill along with the symbol for the particular feature. Each feature was captured with a differentially corrected GPS data recorder and measurements taken for future reference.

Digital photos were taken of each feature. A three-meter long reference marker is shown in most photographs. Digital jpg copies of the photographs are provided on the accompanying CD. The photo log, including the GPS coordinates from where the photo was taken, orientation (measured in degrees from geographic north), feature of note, and picture number are included with each landfill report.

A table entitled, “Landfill Monitoring Checklist” is provided as a summarized version of the feature-by-feature observation log for each landfill where a visual inspection was conducted. The detailed observation log will be used during future visits to monitor changes at each of the noted features as well as to reproduce photo orientations from monitoring event to monitoring event. The assigned lettering for the features should

continue to be used in subsequent years. New features are added to the checklist and are noted as new observations with new letter designations.

A preliminary stability assessment for each inspected landfill is provided at the bottom of the Landfill Monitoring Checklist tables. Settlement, erosion, vegetation, staining, seepage points, debris exposure, ponded water, and overall landfill performance are assigned a severity rating using the following terminology (as provided in the TOR):

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

Furthermore, an assessment of the “Extent” of features and severity ratings is provided at the bottom of the Landfill Monitoring Checklist using the following terminology (as provided in the TOR):

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

2.2.2 Soil Sampling

Soil sampling was conducted at each of the seven landfills in 2011. Soil sample locations were chosen to coincide as closely as possible with the locations listed in the TOR (Table 3, Annex A). Generally, soil samples were collected at depths of 0 m to 0.15 m and 0.4 m to 0.5 m, although two samples were collected at a depth of 0.3 m to 0.4 m due to ground conditions (i.e. hand auger refusal). A total of 56 soil samples were collected from 28 locations. The soil samples were analyzed for polychlorinated biphenyls (PCBs) – Total Aroclor analysis, total petroleum hydrocarbons (TPHs) represented as the total of PHC Fractions F1 (C6 to C10), F2 (C10 to C16), and F3 (C16 to C34), and inorganic elements including arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc, and mercury.

The field methods for collecting the soil samples followed the Quality Assurance/Quality Control (QA/QC) protocols and sampling requirements as requested in the TOR. Soil samples were collected with contaminant-free utensils and stored in sterile jars. Sampling utensils were properly cleaned between each sampling location and rinsed with distilled water. Nitrile gloves were changed between each sampling location.

The soil analytical results for each sampled landfill are discussed individually in the reports presented in Appendices A through F. Laboratory Reports are included in Appendix G.

2.2.3 Groundwater Monitoring and Sampling

Groundwater monitoring and sampling was conducted at the Main Landfill, Non-Hazardous Waste Landfill, and Tier II Soil Disposal Facility in 2011. There are four monitoring wells located at each of the three landfills.

For each monitoring well, the following measurements were documented:

- a) a visual inspection of the condition of the monitoring well;
- b) groundwater elevation;
- c) presence and thickness of free product (if applicable);
- d) depth to bottom of well;
- e) height of well stick up;
- f) pH, electrical conductivity (EC), and in-situ temperature of the groundwater; and,
- g) purge volume and equipment used.

Groundwater samples were collected from the monitoring wells that had sufficient water volumes to obtain samples. In total, ten groundwater samples were collected (2 monitoring wells were dry). The water samples were obtained utilizing a peristaltic pump for low flow extraction. The groundwater samples were analyzed for PCBs – Total Aroclor analysis, TPHs represented as the total of PHC Fractions F1 (C6 to C10), F2 (C10 to C16), and F3 (C16 to C34), and total inorganic elements including arsenic, cadmium, chromium, cobalt, copper, lead, nickel, zinc, and mercury. Samples were not field acidified or filtered.

The field methods for collecting the groundwater samples followed the QA/QC protocols and sampling requirements as requested in the TOR. The monitoring wells were purged

with a peristaltic pump at a rate equivalent or less than 100 mL/min until at least one well volume of water had been purged and until field parameters (pH, EC, and temperature) had stabilized. Values for field parameters were recorded on the sampling records located in Appendix J. New disposable tubing was used in each monitoring well and nitrile gloves were changed between each monitoring well. Groundwater samples were collected in sterile bottles. Sampling utensils were properly cleaned between each monitoring well and rinsed with distilled water.

Monitoring conditions, field measurements, and groundwater analytical results for monitoring wells located at the Main Landfill, Non-Hazardous Waste Landfill, and Tier II Soil Disposal Facility are discussed individually in the reports presented in Appendices A, D, and E, respectively. Laboratory Reports are included in Appendix G.

2.2.4 Thermal Monitoring

Thermal monitoring was conducted at the Main Landfill and Tier II Soil Disposal Facility for 2011. There are four thermistors located at each of the two landfills.

Six of the eight thermistors were reportedly in good condition. The earth ground screw was missing from thermistors VT-5 and VT-7. One of the beads was not working properly in thermistor VT-5. The data was successively downloaded from the eight dataloggers using Lakewoods Systems Ltd. software. The batteries of all dataloggers were replaced according to the TOR and the memories were reset. The dataloggers were checked to confirm that they were recording data prior to reconnection to the thermistor strings. The results are discussed in the individual reports for the Main Landfill and Tier II Soil Disposal Facility presented in Appendices A and E, respectively. Raw data from the downloads is provided on the accompanying CD.

2.3 Deviations from the Terms of Reference

Analytical blanks were not collected as required for the QA/QC program. However, a review of analytical results indicates there is no apparent procedural contamination.

3. LANDFILL MONITORING

As requested in the TOR, the landfill monitoring reports are shown in individual sections under the cover of this main report. The landfill monitoring reports for each landfill are presented in the appendices of this main report as follows:

Appendix A Main Landfill;

Appendix B NWS Landfill;

Appendix C South Landfill – West and East;

Appendix D Non-Hazardous Waste Landfill;

Appendix E Tier II Soil Disposal Facility; and,

Appendix F North Landfill.

All information collected that is relevant to these individual areas is presented in these sections or as attachments at the end of the sections.

4. QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control for the soil and groundwater analytical data has been assessed by taking field duplicates of the materials sampled. For the soil samples collected, a blind duplicate was obtained with a frequency of approximately three samples for every ten original samples collected. For groundwater samples, approximately two duplicate samples were collected for every four original samples. Tables used for the calculation of relative standard deviation's (RSD) are located in Appendix H. All the duplicate soil samples collected during the 2011 monitoring event and their corresponding sample locations are documented in Table H-1 in Appendix H.

All duplicate groundwater samples and their locations are documented in Table H-2 in Appendix H.

A total of 12 blind duplicate soil samples were submitted to the contractor's laboratories for analysis. A minimum of 10% of duplicate samples were sent to Kaizen Laboratory Services in Calgary as blind duplicates. At least 10% of all samples were sent to Maxxam Analytics in Calgary as inter-laboratory duplicates. An additional 10% of soil samples (6 soil samples total) were submitted to the Environmental Sciences Group (ESG) Ops Centre within the Royal Military College of Canada in Kingston, Ontario for archival purposes, as directed by the TOR, and were not analyzed.

Blind duplicates were taken at soil sample locations P3-1, P3-2, P3-11, P3-16, MW-6, MW-8, MW-10 and MW-11. One duplicate sample was submitted to Maxxam and/or Kaizen for analysis. Each sample was analyzed for 11 parameters. Of the RSDs calculated, most returned a value of "n/a" due to one or more concentrations being below the detection limit, 27 returned RSD values of below 20% for inorganics and below 30% for organics, and 29 returned RSD values above 20% for inorganics and above 30% for organics.

Blind duplicates were taken at groundwater sample locations MW-6, MW-12 and MW-15. One duplicate sample was submitted to both Maxxam and Kaizen for analysis. Each sample was analyzed for 11 parameters. Of the RSDs calculated, most returned a value of "n/a" due to one or more concentrations being below the detection limit, 10 returned an acceptable RSD of below 20% for inorganics and below 30% for organics, and eight returned unacceptable RSDs of over 20% for inorganics.

IEG contacted Kaizen for an explanation of the high variability observed between sample and duplicate concentrations. The laboratory indicated that for low concentrations near the detection limit, RSD values should be considered reliable only if the measured

concentrations are 10 times the analytical detection limit. Also, for soils, non-homogeneity of the matrix can produce high variability, particularly in metals and organic parameters, and that RSD values of up to 60% may be considered reliable. In the case of the 2011 monitoring event, the data is considered to be reliable by IEG.

5. CONCLUSIONS

Results and conclusions for individual landfills are shown in the applicable landfill appendices.

6. CLOSING

If you have any questions or comments concerning this report, please contact Chris Langton at (403)-730-6830 or clangton@klohn.com.

Yours truly,

IEG NUNASI CONSULTANTS LTD.



Chris Langton, P.Geol.
Project Manager



Thomas Murray, P.Eng.
Project Reviewer

APPENDIX A

Landfill Monitoring Report – Main Landfill

A-1: Main Landfill

A-1.1 Landfill Summary

A-1.2 Visual Inspection

A-1.3 Soil Sampling

A-1.4 Groundwater Monitoring and Sampling

A-1.5 Thermal Monitoring

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Appendix A2	Site Photographs
Appendix A3	Monitoring Well Development Records
Appendix A4	Thermistor Maintenance Records
Appendix A5	Average Monthly Thermal Monitoring Data

A1. MAIN LANDFILL

A.1.1 Landfill Summary

The Main Landfill is located approximately 800 m west of the main station and encompasses an area of approximately 61,000 m². The depth of landfilled waste materials is approximately 1.5 m. The landfill configuration, including photograph and sample locations, is shown on Figure A1. Prior to the remedial work in 2004, DCC had classified this landfill as a moderate to high potential environmental risk. The remedial work for this landfill included partial excavation of impacted material and the installation of a synthetic liner anchored into the permafrost along the toe of the landfill. Regrading with the placement of additional granular fill material sufficient to promote the permafrost aggradation through the landfilled waste materials and into the cover was also conducted. The cover of the landfill has sparse vegetation. The surface consists of a veneer of pebbles and cobbles overlying the granular and silt cover.

For 2011, the monitoring requirements for the Main Landfill included a visual inspection, soil sampling and analyses, groundwater sampling and analyses, and thermal monitoring.

A.1.2 Visual Inspection

Based on the 2011 visual inspection, the Main Landfill area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. Compared to the 2005 visual inspection report, one additional minor erosional feature was noted. There were no other significant changes from the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix A1 presents a summary of the 2011 visual inspection results and features of note are shown on Figure A1.

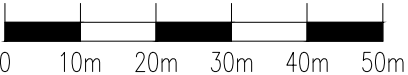
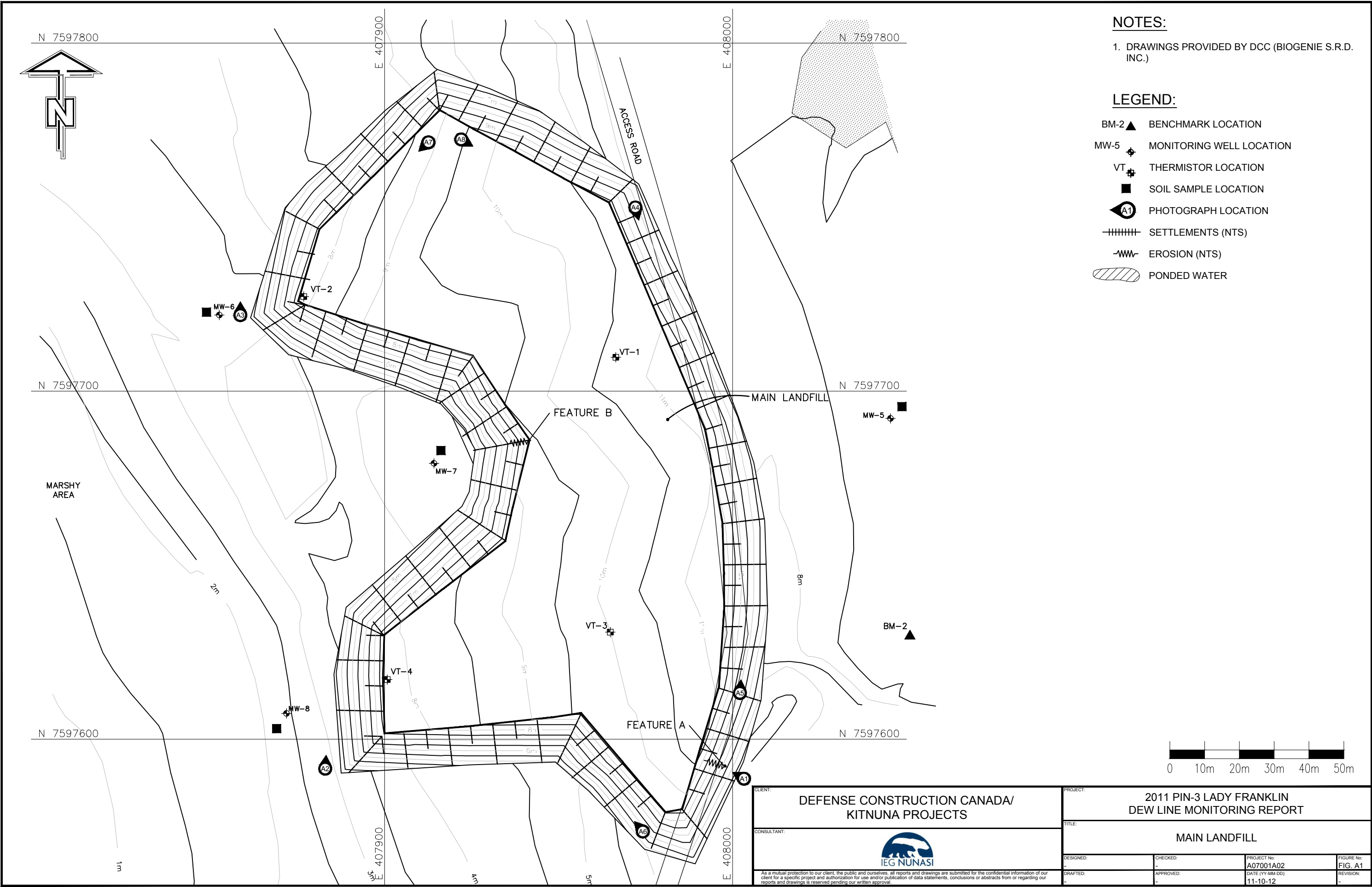
There were two minor erosion gullies observed on the landfill in 2011. One gully is on the southeast slope (Feature A) and was generally unchanged when compared to the 2005 visual inspection report. Feature A is approximately 5 m long, 0.05 m wide and 0.03 m to 0.05 m deep. The other gully (Feature B) is on the western slope and is approximately 15 m long, 0.05 m wide and 0.05 m deep. These areas should be monitored for increased deepening of erosion gullies.

NOTES:

1. DRAWINGS PROVIDED BY DCC (BIOGENIE S.R.D. INC.)

LEGEND:

- BM-2 ▲ BENCHMARK LOCATION
- MW-5 ◈ MONITORING WELL LOCATION
- VT ◈ THERMISTOR LOCATION
- SOIL SAMPLE LOCATION
- ⓐ PHOTOGRAPH LOCATION
- ||||| SETTLEMENTS (NTS)
- W- EROSION (NTS)
- ▨ PONDED WATER



CLIENT: DEFENSE CONSTRUCTION CANADA/
KITNUNA PROJECTS



As a mutual protection to our client, the public and ourselves, all reports and drawings are submitted for the confidential information of our client for a specific project and authorization for use and/or publication of data statements, conclusions or abstracts from or regarding our reports and drawings is reserved pending our written approval.

PROJECT: 2011 PIN-3 LADY FRANKLIN
DEW LINE MONITORING REPORT

TITLE: MAIN LANDFILL

DESIGNED:	CHECKED:	PROJECT No:	FIGURE No:
-	-	A07001A02	FIG. A1
DRAFTED:	APPROVED:	DATE (YY-MM-DD):	REVISION:
-	-	11-10-12	-

A.1.3 Soil Sampling

Soil samples were collected at the designated locations of MW-5, MW-6, MW-7 and MW-8. The sampling locations are shown on Figure A1. A photograph of each test pit for each location sampled is shown in Appendix A2. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table A-1 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in samples collected from the four locations. The greatest concentration of TPH was 43 mg/kg at MW-5 (0 m to 0.15 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

Table A-1. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - Main Landfill

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-031	MW-5	0-0.15	<2	<0.1	16.9	3.6	7.8	<5	0.005	12.0	15.3	43	<0.45
SS11-032	MW-5	0.4-0.5	<2	<0.1	18.6	2.3	6.9	<5	<0.004	11.3	14.0	30	<0.45
SS11-022	MW-6	0-0.15	<2	<0.1	21.7	2.6	6.5	<5	0.004	13.8	13.8	34	<0.45
SS11-023	MW-6	0-0.15	<1	<0.1	6	2	6	1	<0.05	6	<10	<42	<0.010
SS11-024	MW-6	0.4-0.5	<2	<0.1	43.4	3.3	6.0	<5	<0.004	23.8	14.1	40	<0.45
SS11-025	MW-7	0-0.15	<2	<0.1	18.5	3.4	10.4	<5	<0.004	13.4	17.5	23	<0.45
SS11-026	MW-7	0.4-0.5	<2	0.1	87.9	3.7	12.0	<5	<0.004	44.9	20.3	25	<0.45
SS11-027	MW-8	0-0.15	<2	<0.1	<5	1.7	5.1	<5	<0.004	4.2	12.5	15	<0.45
SS11-028	MW-8	0-0.15	<1	<0.1	3	1	<5	<1	<0.05	3	<10	<42	<0.010
SS11-029	MW-8	0.4-0.5	<2	<0.1	<5	2.0	4.1	<5	<0.004	4.3	12.3	<15	<0.45
SS11-030	MW-8	0.4-0.5	<1	<0.1	4	2	<5	<1	<0.05	3	<10	<42	<0.010

	Indicates duplicate sample analysed by Maxxam
	Indicates duplicate sample analysed by Kaizen
	Indicates duplicate sample sent to ESG

A.1.4 Groundwater

Groundwater depths and condition were documented for monitoring wells MW-5, MW-6, MW-7 and MW-8. The monitoring well development records are provided in Appendix A3. The groundwater samples were analyzed for DCC metals, TPHs and PCBs. The results are presented in Table A-2 and the laboratory certificates are provided in Appendix G.

The monitoring wells were found to be in good condition in 2011. TPHs and PCBs were not detected in the groundwater samples collected from the Main Landfill. Detectable concentrations of the metals cobalt, nickel and zinc were measured in one or more groundwater samples.

Table A-2. PIN-3 Lady Franklin Point, Summary of 2011 Groundwater Analysis - Main Landfill

Sample ID	Location	Groundwater Elevation (masl)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Total Petroleum Hydrocarbons (mg/L)	PCB Total Aroclors (mg/L)
WS11-005	MW-5	7.30	<0.001	<0.0005	<0.02	0.014	<0.002	<0.001	<0.0001	0.178	0.07	<1.5	<0.00045
WS11-002	MW-6	2.62	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.022	0.06	<1.5	<0.00045
WS11-001	MW-6	2.62	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.024	0.08	<1.5	<0.00045
WS11-001	MW-6	2.62	0.0007	0.000007	0.009	0.0007	0.0024	0.0002	<0.000002	0.014	0.015	<0.3	<0.000050
WS11-003	MW-7	2.41	<0.001	<0.0005	<0.02	<0.001	<0.002	<0.001	<0.0001	0.004	0.02	<1.5	<0.00045
WS11-004	MW-8	2.05	<0.001	<0.0005	<0.02	0.002	<0.002	<0.001	<0.0001	0.038	0.07	<1.5	<0.00045

Indicates duplicate sample analysed by Maxxam
Indicates duplicate sample analysed by Kaizen

A.1.5 Thermal Monitoring

The manual readings taken from each thermistor (equipped with a data logger) at the Main Landfill and the condition of each thermal installation are provided in the maintenance records located in Appendix A4. The data downloaded from the data loggers spanned from August 2009 to August 2011. The graphs for the thermal data are provided in Appendix A5. All dataloggers were reset and provided with new batteries in 2011.

APPENDIX A ATTACHMENTS

- A1 Visual Inspection Records**
- A2 Site Photographs**
- A3 Monitoring Well Development Records**
- A4 Thermistor Maintenance Records**
- A5 Thermistor Graphs**

APPENDIX A1

Visual Inspection Records

Visual Inspection Checklist, PIN-3 Main Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION-LANDFILL MONITORING VISUAL INSPECTION CHECKLIST INSPECTION REPORT			
Site Name	PIN-3 Lady Franklin Point	Landfill Designation	Main Landfill
Date of Inspection	August 24, 2011	Date of Previous Inspection	2009
Inspected by	Jared Peterson	Report Prepared by	N/A

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature Present		Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement		N								
Erosion	A	Y	Southeast slope		5.0	3-5	<1	Erosion feature appears to have been filled in partially	A1	
	B	Y	West slope	15.0	5.0	5.0	<1	Minor erosion	A9	
Frost Action		N								
Sloughing and Cracking		N								
Animal Burrows		N								
Vegetation		Y	Across landfill surface					Sparse vegetation in some areas	A11, A13, A15	
Staining		N								
Vegetation Stress		N								
Seepage Points		N								
Debris Exposed		N								
Presence/ Condition of Monitoring Instruments		Y	Various locations						A14, A15, A16, A17	
Other Features of Note		N								

NSC - "No Significant Change"

Additional photos: A2-A8, A10, A12

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Not observed	N/A
Erosion	Acceptable	Isolated
Frost Action	Not observed	N/A
Staining	Not observed	N/A
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Not observed	N/A
Debris exposure	Not observed	N/A
Overall Landfill Performance	Acceptable	

APPENDIX A2

Site Photographs



Photo A1
Close up view of erosion feature



Photo A2
North view of southwest slope



Photo A3
North view of northwest slope



Photo A4
South view of northeast slope



Photo A5
North view of southeast slope



Photo A6
Northwest view of south slope



Photo A7
Southwest view of top from north corner



Photo A8
Southeast view of top from north corner



Photo A9
Erosion feature looking west



Photo A10
Soil Sampling
MW-5



Photo A11
Soil Sampling
MW-6

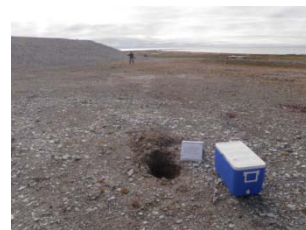


Photo A12
Soil Sampling
MW-7



Photo A13
Soil Sampling
MW-8



Photo A14
Groundwater Sampling
MW-5



Photo A15
Groundwater Sampling
MW-6



Photo A16
Groundwater Sampling
MW-7



Photo A17
Groundwater Sampling
MW-8

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - Main Landfill

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/24/2011		A1	408003	7597589		Close up view of erosion feature
8/24/2011		A2	407883	7597592		North view of southwest slope
8/24/2011		A3	407859	7597722		North view of northwest slope
8/24/2011		A4	407972	7597753		South view of northeast slope
8/24/2011		A5	408002	7597613		North view of southeast slope
8/24/2011		A6	407974	7597573		Northwest view of south slope
8/24/2011		A7	407913	7597772		Southwest view of top from north corner
8/24/2011		A8	407922	7597772		Southeast view of top from north corner
8/24/2011	B	A9	407942	7597686	1	Erosion feature looking west
8/24/2011		A10	408045	7597692		Soil Sampling MW-5
8/24/2011		A11	407853	7597722		Soil Sampling MW-6
8/24/2011		A12	407914	7597679		Soil Sampling MW-7
8/24/2011		A13	407872	7597607		Soil Sampling MW-8
8/24/2011		A14	408045	7597692	<1	Groundwater Sampling MW-5
8/24/2011		A15	407853	7597722	<1	Groundwater Sampling MW-6
8/24/2011		A16	407914	7597679	<1	Groundwater Sampling MW-7
8/24/2011		A17	407872	7597607	<1	Groundwater Sampling MW-8

APPENDIX A3

Monitoring Well Development Records

Monitoring Well Observations (MW-5)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	24-Aug-11	Time:	19:45
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-5		
Sample Number:	WS11-005		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	48		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	226.7	Method:	interface meter
Static water level (cm) =	178.7		
Depth to bottom (cm) =	370.5	Evidence of sludge/siltation:	no
Depth of water (cm) =	143.8		
Well volume of water (mL) =	2823.51		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.13		
Conductivity (mS/cm) =	270		
Temperature (°C) =	5.3		

Monitoring Well Observations (MW-6)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	24-Aug-11	Time:	13:57
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-6		
Sample Number:	WS11-001		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	50.5		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	144.9	Method:	interface meter
Static water level (cm) =	94.4		
Depth to bottom (cm) =	376.5	Evidence of sludge/siltation:	no
Depth of water (cm) =	231.6		
Well volume of water (mL) =	4547.46		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.21		
Conductivity (mS/cm) =	1.59		
Temperature (°C) =	5.5		

Monitoring Well Observations (MW-7)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	24-Aug-11	Time:	15:58
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-7		
Sample Number:	WS11-003		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	30		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	224.6	Method:	interface meter
Static water level (cm) =	194.6		
Depth to bottom (cm) =	358.7	Evidence of sludge/siltation:	no
Depth of water (cm) =	134.1		
Well volume of water (mL) =	2633.05		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	12.24		
Conductivity (mS/cm) =	0.936		
Temperature (°C) =	5.3		

Monitoring Well Observations (MW-8)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	24-Aug-11	Time:	17:07
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-8		
Sample Number:	WS11-004		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	50		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	102.6	Method:	interface meter
Static water level (cm) =	52.6		
Depth to bottom (cm) =	336.1	Evidence of sludge/siltation:	no
Depth of water (cm) =	233.5		
Well volume of water (mL) =	4584.76		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.16		
Conductivity (mS/cm) =	2.2		
Temperature (°C) =	4.9		

APPENDIX A4

Thermistor Maintenance Records

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name: IEG Nunasi Consultants	Inspection Date: 25-Aug-11
Prepared By: Ryan Lennie	

Thermistor Information

Site Name: PIN-3	Thermistor Location	Main Landfill
Thermistor Number: VT-1	Inclination	Vertical
Install Date: 5-Sep-04	First Date Event	Last Date Event
Coordinates and Elevation	N 9681.35	E 9291.581 Elev 10.714
Length of Cable (m) 7.8	Cable Lead Above Ground 2.6	Nodal Points 11
Datalogger Serial # 108043	Cable Serial Number	1607

Code PIN-3VT-1

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	
Cover	X	
Data Logger	X	
Cable	X	
Beads	X	
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 12.29 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10870	8.2
2	11900	6.3
3	13090	4.3
4	14320	2.6
5	15780	0.7
6	16770	-0.5
7	18190	-2.1
8	19320	-3.2

Bead	ohms	Degrees C
9	20270	-4.1
10	21550	-5.3
11	22060	-5.8

Observations and Proposed Maintenance

Memory 82% full

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name: IEG Nunasi Consultants	Inspection Date: 25-Aug-11
Prepared By: Ryan Lennie	

Thermistor Information

Site Name: PIN-3	Thermistor Location	Main Landfill
Thermistor Number: VT-2	Inclination	Vertical
Install Date: 5-Sep-04	First Date Event	Last Date Event
Coordinates and Elevation N 9698.82	E 9209.988	Elev 7.92
Length of Cable (m) 9.5	Cable Lead Above Ground 4.9	Nodal Points 14
Datalogger Serial # 111103	Cable Serial Number	1608

Code PIN-3VT-2

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	
Cover	X	
Data Logger	X	
Cable	X	
Beads	X	
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 13.50 V

Manual Ground Temperature Readings

A

Bead	ohms	Degrees C
1	9320	11.4
2	9390	11.2
3	9450	11.1
4	8726	12.8
5	10360	9.2
6	11720	6.6
7	12700	5.0
8	14260	2.6

B

Bead	ohms	Degrees C
9	16090	0.3
10	16760	-0.5
11	17360	-1.2
12	18050	-1.9
13	18600	-2.5
14	19260	-3.2

Observations and Proposed Maintenance

Memory 82% full

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name: IEG Nunasi Consultants	Inspection Date: 25-Aug-11
Prepared By: Ryan Lennie	

Thermistor Information

Site Name: PIN-3	Thermistor Location: Main Landfill
Thermistor Number: VT-3	Inclination: Vertical
Install Date: 5-Sep-04	First Date Event: Last Date Event
Coordinates and Elevation: N 9602.44 E 9298.113 Elev 10.014	
Length of Cable (m): 7.8	Cable Lead Above Ground: 2.7 Nodal Points: 11
Datalogger Serial #: 111108	Cable Serial Number: 1609

Code PIN-3 VT-3

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	☐
Cover	X	☐
Data Logger	X	☐
Cable	X	☐
Beads	X	☐
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 12.41 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	10970	8.0
2	12040	6.0
3	12990	4.5
4	14480	2.3
5	16090	0.3
6	17100	-0.9
7	18560	-2.5
8	19570	-3.5

Bead	ohms	Degrees C
9	20790	-4.6
10	21730	-5.5
11	22300	-6.0

Observations and Proposed Maintenance

Memory 82% full.

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name: IEG Nunasi Consultants	Inspection Date: 25-Aug-11
Prepared By: Ryan Lennie	

Thermistor Information

Site Name: PIN-3	Thermistor Location	Main Landfill
Thermistor Number: VT-4	Inclination	Vertical
Install Date: 5-Sep-04	First Date Event	Last Date Event
Coordinates and Elevation	N 9588.91	E 9233.938 Elev 7.82
Length of Cable (m) 8.2	Cable Lead Above Ground 3.7	Nodal Points 12
Datalogger Serial # 108093	Cable Serial Number	1610

Code PIN-3VT-4

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	
Cover	X	
Data Logger	X	
Cable	X	
Beads	X	
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 13.38 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9450	11.1
2	8730	12.7
3	10820	8.3
4	12100	6.0
5	13030	4.5
6	14350	2.6
7	15690	0.8
8	16790	-0.5

Bead	ohms	Degrees C
9	17400	-1.2
10	18280	-2.2
11	19000	-2.9
12	19270	-3.2

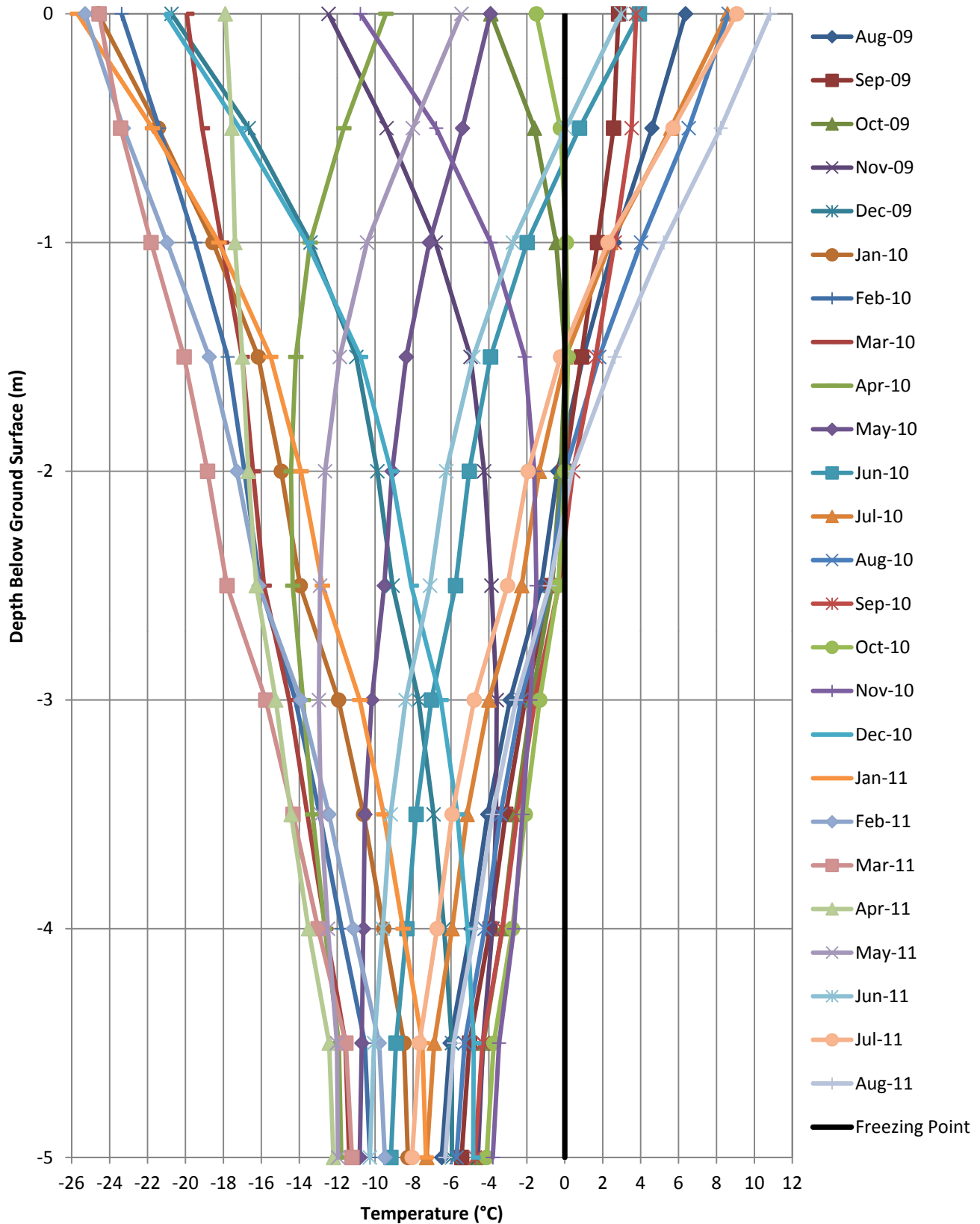
Observations and Proposed Maintenance

Memory 82% full

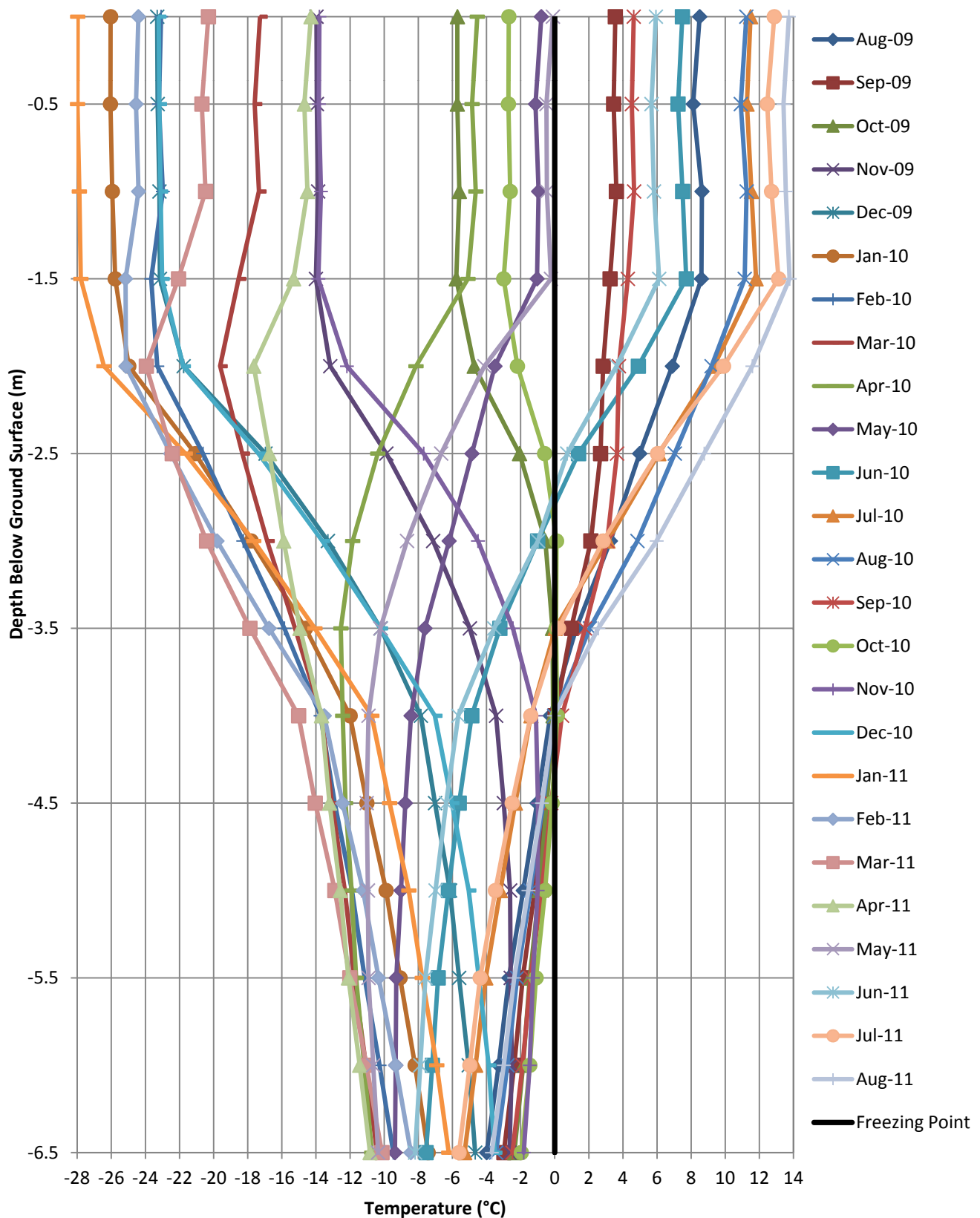
APPENDIX A5

Thermistor Graphs

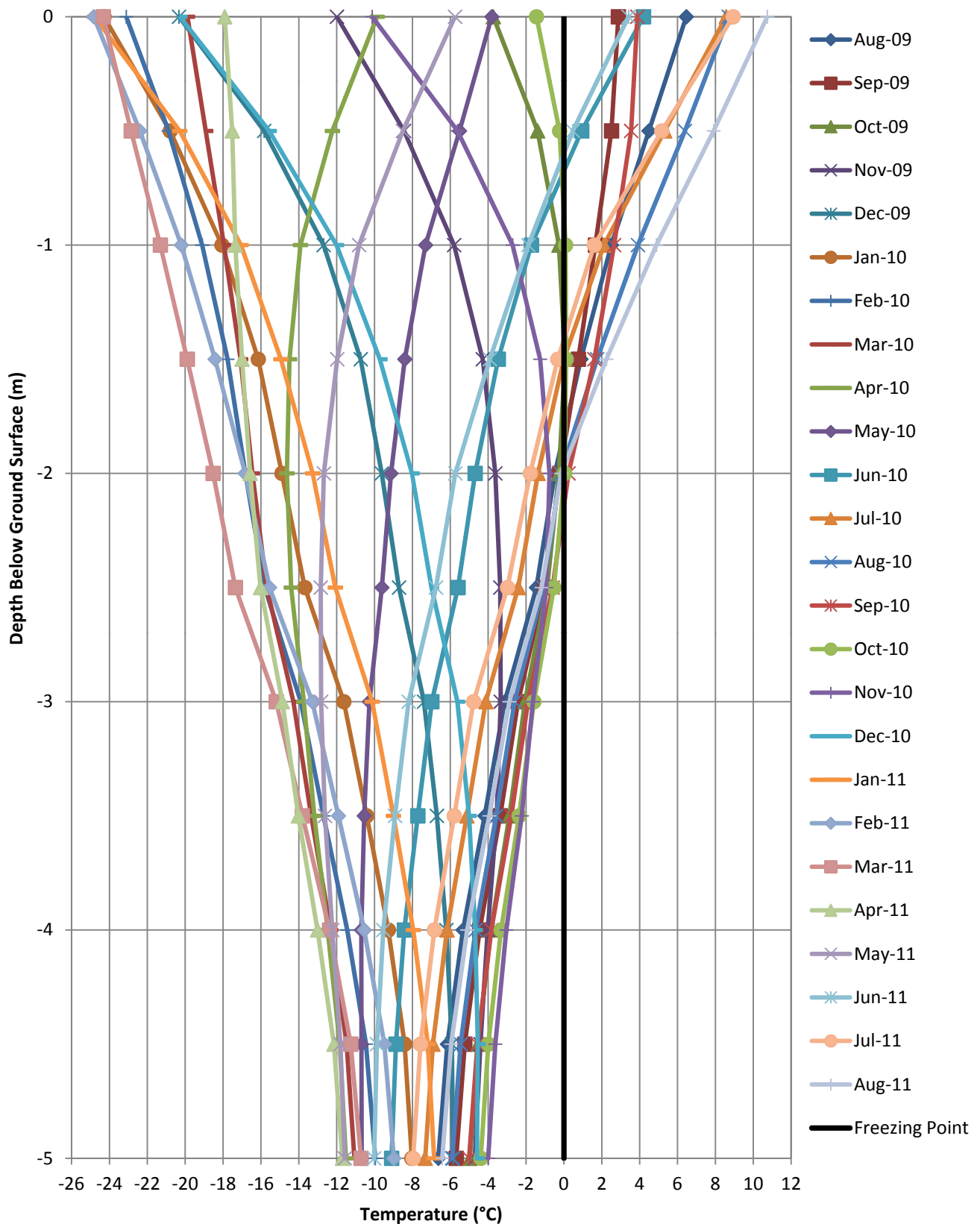
Average Monthly Thermal Monitoring Data Thermistor VT-1



Average Monthly Thermal Monitoring Data Thermistor VT-2

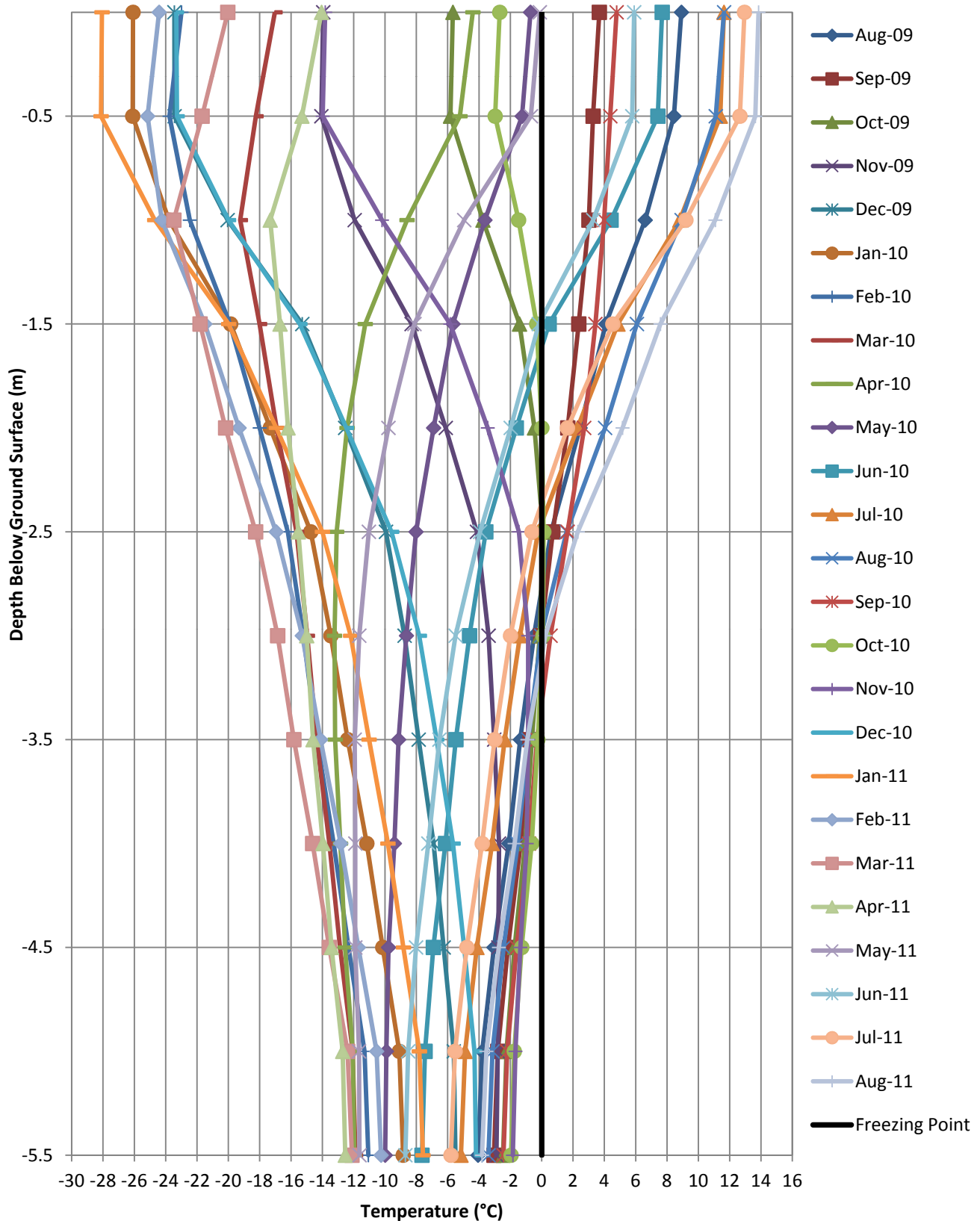


Average Monthly Thermal Monitoring Data Thermistor VT-3



Average Monthly Thermal Monitoring Data

Thermistor VT-4



APPENDIX B

Landfill Monitoring Report – NWS Landfill

B-1: NWS Landfill

B-1.1 Landfill Summary

B-1.2 Visual Monitoring

B-1.3 Soil Sampling

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B.1.2 Visual Inspection	1
B.1.3 Soil Sampling.....	4

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Appendix B1	Visual Inspection Records
Appendix B2	Site Photographs

B1. NWS LANDFILL

B.1.1 Landfill Summary

The NWS Landfill is located approximately 700 m west of the main station and encompasses an area of approximately 42,000 m². Historically at this landfill, waste material was first burned and then covered with gravel. The depth of landfilled waste materials is approximately 0.5 m. The landfill configuration, including photograph and sample locations, is shown on Figure B1. Prior to the remedial work in 2004, DCC had classified this landfill as a moderate potential environmental risk and areas of DCC Tier II soil were identified. The remedial work for this landfill included the excavation of known contaminated surficial soils and regrading with additional granular fill. The cover of the landfill has sparse vegetation. The surface consists of a veneer of pebbles and cobbles overlying the granular and silt cover.

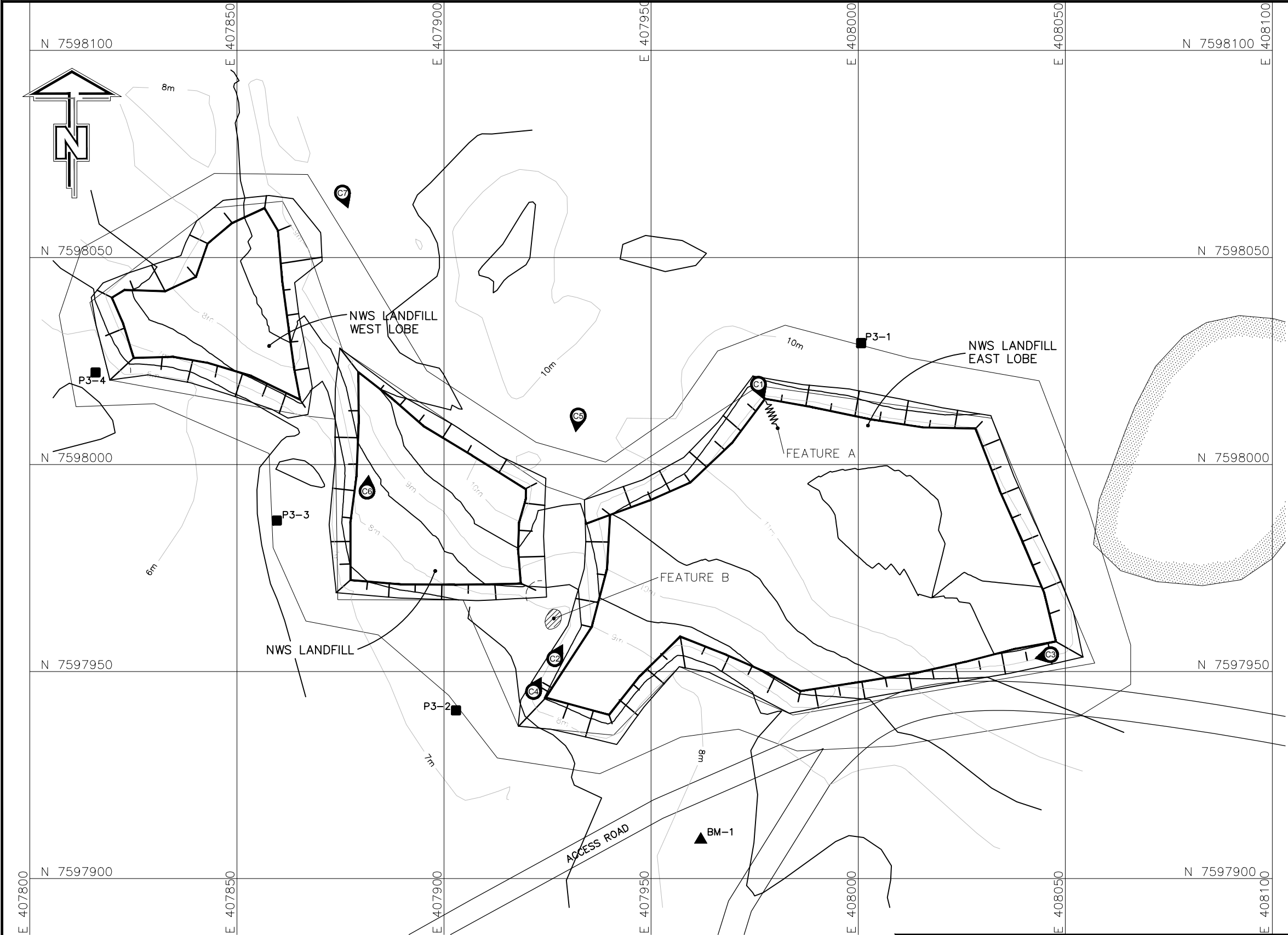
For 2011, the monitoring requirements for the NWS Landfill included a visual inspection and soil sampling and analyses.

B.1.2 Visual Inspection

Based on the 2011 visual inspection, the NWS Landfill area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. There were no changes compared to the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix F1 presents a summary of the 2011 visual inspection results and features of note are shown on Figure F1.

There was one minor erosion feature noted in 2005. In 2011, this feature (Feature A) was again observed; however, it was interpreted to be a scour mark cause by an adjacent boulder likely being pushed across the ground surface by heavy machinery.

An area of ponded water between the central and eastern landfill areas was observed in 2005 and 2011 (Feature B). The ponded water was approximately 3 m long and 3 m wide. The water did not have a visible sheen.

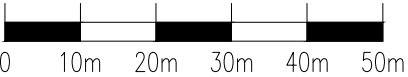


NOTES:

1. DRAWINGS PROVIDED BY DCC (BIOGENIE S.R.D. INC.)

LEGEND:

- BM-2 ▲ BENCHMARK LOCATION
- MW-5 ⬮ MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION
- C1 PHOTOGRAPH LOCATION
- POONDED WATER
- W- EROSION (NTS)



CLIENT: DEFENSE CONSTRUCTION CANADA/ KITNUNA PROJECTS		PROJECT: 2011 PIN-3 LADY FRANKLIN DEW LINE MONITORING REPORT	
CONSULTANT: 		TITLE: NWS LANDFILL	
DESIGNED: -	CHECKED: -	PROJECT No: A07001A02	FIGURE No: FIG. B1
DRAFTED: -	APPROVED: -	DATE (YY-MM-DD): 11-10-12	REVISION: -

B.1.3 Soil Sampling

Soil samples were collected at the designated locations of P3-1, P3-2, P3-3 and P3-4. The sampling locations are shown on Figure B1. A photograph of each test pit for each location sampled is shown in Appendix B2. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table B-1 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in samples collected from the four locations. The greatest concentration of TPH was 1612 mg/kg at P3-4 (0 m to 0.15 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

Table B-1. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - NWS Landfill

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-012	P3-1	0-0.15	<2	<0.1	31.6	1.8	5.9	<5	0.006	19.0	10.3	205	<0.45
SS11-013	P3-1	0.4-0.5	2.0	<0.1	18.9	2.0	3.3	<5	0.006	13.1	9.7	145	<0.45
SS11-014	P3-1	0.4-0.5	1	0.1	4	2	<5	3	<0.05	5	<10	<42	<0.010
SS11-015	P3-2	0-0.15	<2	0.2	31.8	3.2	10.9	<5	<0.004	20.0	22.6	19	<0.45
SS11-016	P3-2	0-0.15	<1	<0.1	6	3	8	2	<0.05	10	<10	<42	<0.010
SS11-017	P3-2	0.4-0.5	<2	0.1	25.4	3.0	8.0	<5	<0.004	16.9	14.1	16	<0.45
SS11-018	P3-3	0-0.15	<2	0.2	53.3	2.9	11.3	<5	0.006	30.1	15.0	66	<0.45
SS11-019	P3-3	0.4-0.5	<2	0.1	22.6	2.8	9.9	<5	0.005	16.0	17.3	41	<0.45
SS11-020	P3-4	0-0.15	<2	0.5	55.8	1.9	8.2	6.1	0.044	29.7	34.0	1612	<0.45
SS11-021	P3-4	0.4-0.5	2.3	0.1	68.0	2.0	5.5	<5	0.009	37.6	8.3	131	<0.45

	Indicates duplicate sample analysed by Maxxam
	Indicates duplicate sample analysed by Kaizen
	Indicates duplicate sample sent to ESG

APPENDIX B ATTACHMENTS

- B1 Visual Inspection Records**
- B2 Site Photographs**

APPENDIX B1

Visual Inspection Records

Visual Inspection Checklist, PIN-3 NWS Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION-LANDFILL MONITORING VISUAL INSPECTION CHECKLIST INSPECTION REPORT			
Site Name	PIN-3 Lady Franklin Point	Landfill Designation	NWS Landfill
Date of Inspection	August 24, 2011	Date of Previous Inspection	2009
Inspected by	Jared Peterson	Report Prepared by	N/A

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature Present		Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement		N								
Erosion	A	Y	North slope	0.4	30.0	15.0	<1	Diagnosed in previous report as an erosion feature. Upon further investigation, feature appears to be scour mark from adjacent boulder	C1	
Frost Action		N								
Sloughing and Cracking		N								
Animal Burrows		N								
Vegetation		Y	Across landfill surface				<1	Sparse vegetation in some areas	C9	
Staining		N								
Vegetation Stress		N								
Seepage Points		N								
Debris Exposed		N								
Presence/ Condition of Monitoring Instruments		N								
Other Features of Note	B	Y	Between central and eastern lobes				<1	Ponded water cannot drain in depression	C2	

NSC - "No Significant Change"

Additional photos: C3-C8, C10, C11

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Not observed	N/A
Erosion	Acceptable	Isolated
Frost Action	Not observed	N/A
Staining	Not observed	N/A
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Not observed	N/A
Overall Landfill Performance	Acceptable	

APPENDIX B2

Site Photographs



Photo C1
Close up view of erosion feature



Photo C2
Close up view of ponded water



Photo C3
Southwest view of east regraded area



Photo C4
North view of west side of regraded area



Photo C5
South view of main regraded area



Photo C6
North view of main regraded area



Photo C7
South view of west regraded area

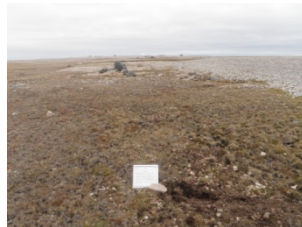


Photo C8
Soil Sampling
P3-1



Photo C9
Soil Sampling
P3-2



Photo C10
Soil Sampling
P3-3

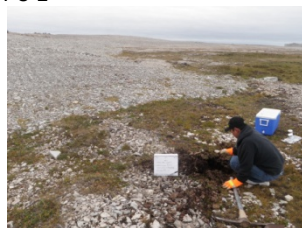


Photo C11
Soil Sampling
P3-4

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - NWS Landfill

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/24/2011	A	C1	407976	7598019	2	Close up view of erosion feature
8/24/2011	B	C2	407927	7597953	3	Close up view of ponded water
8/24/2011		C3	408046	7597954		Southwest view of east regraded area
8/24/2011		C4	407922	7597945		North view of west side of regraded area
8/24/2011		C5	407932	7598012		South view of main regraded area
8/24/2011		C6	407881	7597994		North view of main regraded area
8/24/2011		C7	407875	7598066		South view of west regraded area
8/24/2011		C8	408001	7598029		Soil Sampling P3-1
8/24/2011		C9	407903	7597941		Soil Sampling P3-2
8/24/2011		C10	407860	7597986		Soil Sampling P3-3
8/24/2011		C11	407816	7598022		Soil Sampling P3-4

APPENDIX C

Landfill Monitoring Report – South Landfill

C-1: South Landfill

- C-1.1 Landfill Summary
- C-1.2 Visual Monitoring
- C-1.3 Soil Sampling

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Appendix C2	Visual Inspection Records - East
Appendix C3	Site Photographs - West
Appendix C4	Site Photographs - East

C1. SOUTH LANDFILL

C.1.1 Landfill Summary

The South Landfill is located approximately 1450 m south of the main station and encompasses an area of approximately 40,000 m². The depth of landfilled waste materials is approximately 1 m. The landfill configuration, including photograph and sample locations, is shown on Figure C1. Historically, four lobes comprised the South Landfill. Three lobes are currently present at the landfill, and the fourth lobe was excavated in 2004. The “West” includes two lobes and the “East” includes one lobe. DCC classified the remaining three lobes at the South Landfill as low to moderate potential environmental risk. The remedial work for the remaining lobes included regrading with additional granular fill. The cover of the landfill has sparse vegetation. The surface consists of a veneer of pebbles and cobbles overlying the granular and silt cover.

For 2011, the monitoring requirements for the South Landfill included a visual inspection and soil sampling and analyses.

C.1.2 Visual Inspection

C.1.2.1 South Landfill – West

Based on the 2011 visual inspection, the South Landfill - West area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. There were minor changes compared to the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix C1 presents a summary of the 2011 visual inspection results and features of note are shown on Figure C1.

There were four areas of ponded water noted in 2005. In 2011, these areas were again observed (Features A, B, C and D). Ponded water Feature B had a sheen that was observed in 2011. Feature A had iron oxide staining around the ponded water.

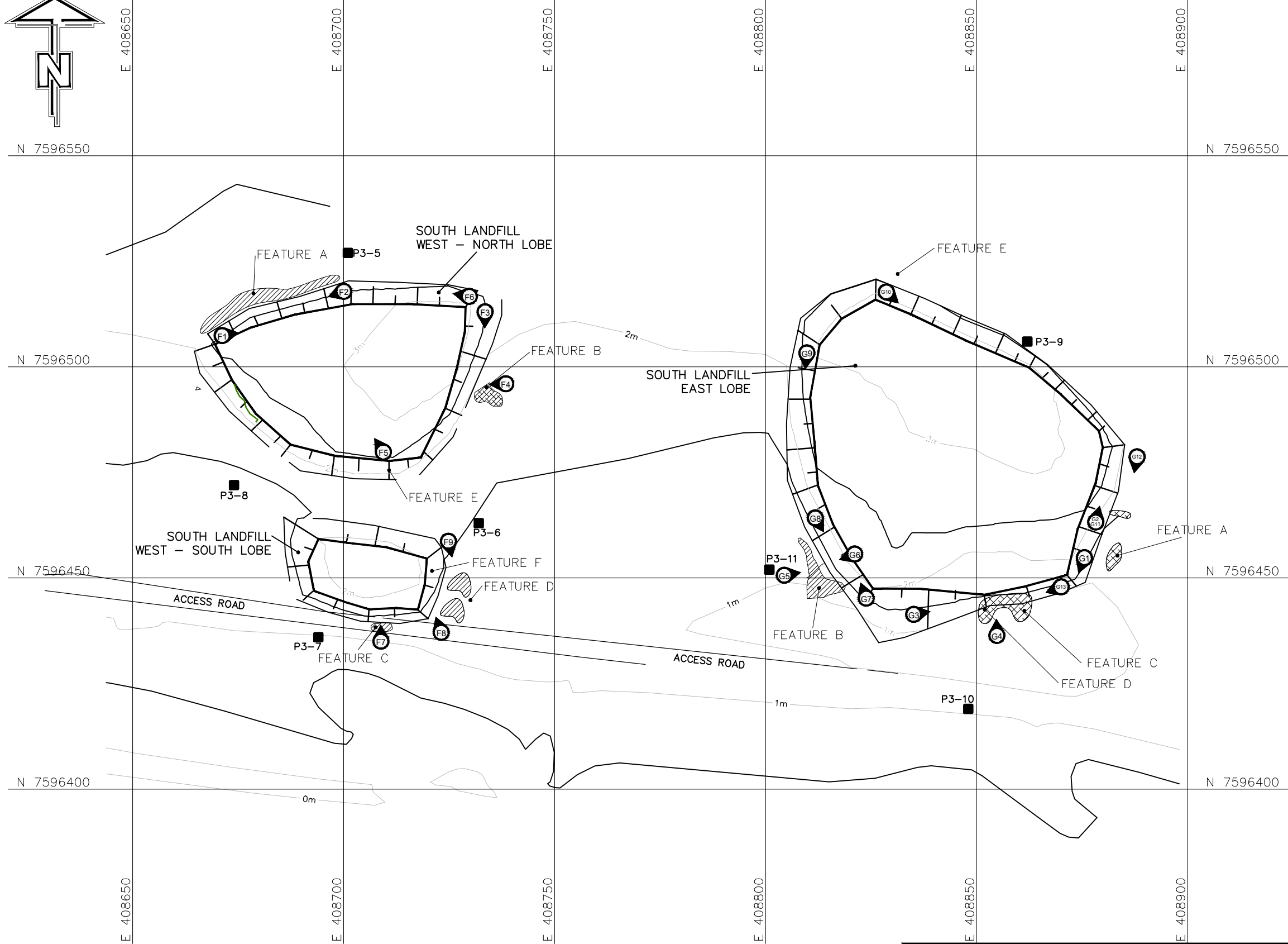
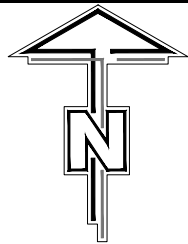
Two areas of exposed debris were observed in 2011: along the southern slope of the north lobe (Feature E) and along the eastern slope of the south lobe (Feature F). In both areas, rusted exposed metal was observed.

C.1.2.2 South Landfill – East

Based on the 2011 visual inspection, the South Landfill - East area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. There were minor changes compared to the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix C1 presents a summary of the 2011 visual inspection results and features of note are shown on Figure C1.

There were four areas of ponded water noted in 2005. In 2011, these areas were again observed. Ponded water Features A and B had a sheen and iron oxide staining that were observed in 2011. Features C and D had a visible sheen.

One area of exposed debris was observed in 2011 north of the northern slope (Feature E). In this area, a rusted 45 gallon drum was exposed.

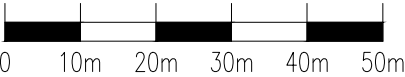


NOTES:

1. DRAWINGS PROVIDED BY DCC (BIOGENIE S.R.D. INC.)

LEGEND:

- PHOTOGRAPH LOCATION
- SOIL SAMPLE LOCATION
- PONDED WATER
- STAINING



CLIENT: DEFENSE CONSTRUCTION CANADA/ KITNUNA PROJECTS		PROJECT: 2011 PIN-3 LADY FRANKLIN DEW LINE MONITORING REPORT	
CONSULTANT: 		TITLE: SOUTH LANDFILL	
DESIGNED: -	CHECKED: -	PROJECT No: A07001A02	FIGURE No: FIG. C1
DRAFTED: -	APPROVED: -	DATE (YY-MM-DD): 11-10-12	REVISION: -

C.1.3 Soil Sampling

C.1.3.1 South Landfill – West

Soil samples were collected at the designated locations of P3-5, P3-6, P3-7 and P3-8. The sampling locations are shown on Figure C1. A photograph of each test pit for each location sampled is shown in Appendix C2. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table C-1 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in samples collected from the four locations. The greatest concentration of TPH was 4,828 mg/kg at P3-8 (0.4 m to 0.5 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

C.1.3.2 South Landfill – East

Soil samples were collected at the designated locations of P3-9, P3-10 and P3-11. The sampling locations are shown on Figure C1. A photograph of each test pit for each location sampled is shown in Appendix C2. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table C-2 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in samples collected from the three locations. The greatest concentration of TPH was 1,823 mg/kg at P3-11 (0 m to 0.15 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

Table C-1. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - South Landfill - West

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-059	P3-5	0-0.15	<2	0.1	21.9	3.1	15.3	<5	0.007	14.0	19.8	777	<0.45
SS11-060	P3-5	0.4-0.5	<2	<0.1	15.1	1.4	9.4	<5	<0.004	8.5	9.4	37	<0.45
SS11-061	P3-5	0.4-0.5											
SS11-054	P3-6	0-0.15	<2	<0.1	<5	1.1	2.6	<5	<0.004	3.2	8.7	15	<0.45
SS11-055	P3-6	0-0.15											
SS11-056	P3-6	0.4-0.5	<2	0.1	27.2	2.4	10.1	<5	<0.004	14.9	15.9	18	<0.45
SS11-052	P3-7	0-0.15	2.2	0.1	40.1	4.6	20.8	<5	0.004	22.9	18.5	43	<0.45
SS11-053	P3-7	0.4-0.5	2.9	0.1	50.7	4.4	11.4	<5	0.004	26.9	17.1	27	<0.45
SS11-057	P3-8	0-0.15	<2	0.1	25.0	3.3	16.0	14.3	<0.004	15.0	22.1	2293	<0.45
SS11-058	P3-8	0.4-0.5	<2	0.1	20.4	3.0	18.8	6.2	<0.004	12.5	16.6	4828	<0.45

	Indicates duplicate sample analysed by Maxxam
	Indicates duplicate sample analysed by Kaizen
	Indicates duplicate sample sent to ESG

Table C-2. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - South Landfill - East

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-062	P3-9	0-0.15	<2	<0.1	20.2	2.5	6.8	<5	<0.004	12.1	12.1	<15	<0.45
SS11-063	P3-9	0.4-0.5	<2	<0.1	61.9	2.9	8.7	<5	<0.004	30.6	12.4	21	<0.45
SS11-064	P3-10	0-0.15	<2	<0.1	11.3	1.7	5.7	<5	<0.004	7.1	12.2	36	<0.45
SS11-065	P3-10	0-0.15											
SS11-066	P3-10	0.4-0.5	<2	0.1	18.6	1.9	7.0	<5	<0.004	10.4	11.9	30	<0.45
SS11-067	P3-11	0-0.15	2.8	0.9	28.0	1.8	11.0	<5	0.006	16.3	20.2	1823	<0.45
SS11-068	P3-11	0-0.15	4.7	1.4	28.9	2.2	18.5	<5	0.004	18.3	21.7	2840	<0.45
SS11-069	P3-11	0.4-0.5	2.2	0.1	22.1	2.6	17.5	<5	<0.004	13.3	15.3	61	<0.45
SS11-070	P3-11	0.4-0.5	<2	0.1	26.0	2.8	9.7	<5	<0.004	15.2	16.6	47	<0.45

Indicates duplicate sample analysed by Maxxam
Indicates duplicate sample analysed by Kaizen
Indicates duplicate sample sent to ESG

APPENDIX C ATTACHMENTS

- C1 Visual Inspection Records – West**
- C2 Visual Inspection Records – East**
- C3 Site Photographs – West**
- C4 Site Photographs – East**

APPENDIX C1

Visual Inspection Records - West

Visual Inspection Checklist, PIN-3 South Landfill - West

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

Site Name

PIN-3 Lady Franklin Point

Landfill Designation

South Landfill - West

Date of Inspection

August 25, 2011

Date of Previous Inspection

2009

Inspected by

Jared Peterson

Report Prepared by

N/A

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature	Present	Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement		N								
Erosion		N								
Frost Action		N								
Sloughing and Cracking		N								
Animal Burrows		N								
Vegetation		Y	Across landfill surface					Sparse vegetation in some areas	F5	
Staining		Y	Feature A, Feature B				1-2	Feature A: iron oxide staining around ponded water; Feature B: sheen on water	F10, F11	
Vegetation Stress		N								
Seepage Points	A	Y	Northern toe of north lobe					Ponded water	F1, F2	
	B	Y	Eastern toe of north lobe					Ponded water	F3, F4	
	C	Y	Southern toe of south lobe					Ponded water	F7	
	D	Y	Eastern toe of south lobe					Ponded water	F8, F9	
Debris Exposed	E	Y	Southern slope of north lobe	0.4	40.0		<1	Rusted exposed metal	F12	
	F	Y	Eastern slope of south lobe	0.2	10.0		<1	Rusted exposed metal	F13	
Presence/ Condition of Monitoring Instruments		N								
Other Features of Note		N								

NSC - "No Significant Change"

Additional photos: F6, F14-F20

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Not observed	N/A
Erosion	Not observed	N/A
Frost Action	Not observed	N/A
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Acceptable	Isolated
Overall Landfill Performance	Acceptable	

APPENDIX C2

Visual Inspection Records - East

Visual Inspection Checklist, PIN-3 South Landfill - East

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

Site Name	PIN-3 Lady Franklin Point	Landfill Designation	South Landfill - East
Date of Inspection	August 25, 2011	Date of Previous Inspection	2009
Inspected by	Jared Peterson	Report Prepared by	N/A

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature	Present	Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement		N								
Erosion		N								
Frost Action		N								
Sloughing and Cracking		N								
Animal Burrows		N								
Vegetation		Y	Across landfill surface				<1	Sparse vegetation in some areas		
Staining		Y	Feature A, Feature B, Feature C, Feature D				1-2	Features A and B: iron oxide staining and sheen; Features C and D: sheen on water	G4, G14, G16-G19	
Vegetation Stress		N								
Seepage Points	A	Y	Southeastern toe					Ponded water	G1, G2	
	B	Y	Southwestern toe					Ponded water	G5, G6, G8	
	C	Y	Along eastern toe					Ponded water	G12	
	D	Y	Along southern toe					Ponded water	G13	
Debris Exposed	E	Y	North of northern toe	0.4	40.0		<1	Exposed rusted 45 gallon drum	G15	
Presence/ Condition of Monitoring Instruments		N								
Other Features of Note		N								

NSC - "No Significant Change"

Additional photos: G3, G7-G11

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Not observed	N/A
Erosion	Not observed	N/A
Frost Action	Not observed	N/A
Staining	Acceptable	Isolated
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Acceptable	Isolated
Overall Landfill Performance	Acceptable	

APPENDIX C3

Site Photographs – West



Photo F1
Northwest view of ponded water
feature A



Photo F2
Southwest view of ponded water
feature A



Photo F3
South view of ponded water feature
B



Photo F4
West view of ponded water
feature B



Photo F5
Northwest view of landfill surface



Photo F6
West view of north slope



Photo F7
North view of ponded water
feature C



Photo F8
Northwest view of ponded water
feature D



Photo F9
South view of ponded water feature
D



Photo F10
Close up view of hydrocarbon
sheen at ponded water feature B



Photo F11
South view of Iron Oxide staining



Photo F12
North view of exposed debris on
south slope



Photo F13
West view of exposed debris on
toe of slope



Photo F14
Soil Sampling
P3-5

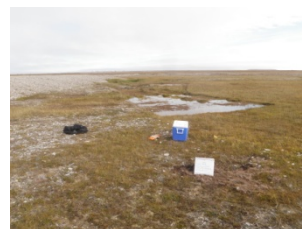


Photo F15
Soil Sampling
P3-6



Photo F16
Soil Sampling
P3-7



Photo F17
Soil Sampling
P3-8

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - South Landfill - West

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/25/2011	A	F1	408664	7596506	4	Northwest view of ponded water feature A
8/25/2011	A	F2	408693	7596517	3	Southwest view of ponded water feature A
8/25/2011	B	F3	408727	7596512	6	South view of ponded water feature B
8/25/2011	B	F4	408731	7596495	6	West view of ponded water feature B
8/25/2011		F5	408702	7596479		Northwest view of landfill surface
8/25/2011		F6	408723	7596516		West view of north slope
8/25/2011	C	F7	408702	7596434	7	North view of ponded water feature C
8/25/2011	D	F8	408716	7596436	4	Northwest view of ponded water feature D
8/25/2011	D	F9	408718	7596458	7	South view of ponded water feature D
8/25/2011	B	F10	408731	7596495	1	Close up view of hydrocarbon sheen at ponded water feature B
8/25/2011	B	F11	408731	7596495	1	South view of iron oxide staining
8/25/2011	E	F12	408704	7596476	<1	North view of exposed debris on south slope
8/25/2011	E	F13	408704	7596476	<1	West view of exposed debris on toe of slope
8/25/2011		F14	408694	7596527		Soil Sampling P3-5
8/25/2011		F15	408725	7596463		Soil Sampling P3-6
8/25/2011		F16	408687	7596436		Soil Sampling P3-7
8/25/2011		F17	408667	7596472		Soil Sampling P3-8
8/25/2011		F18	408855	7596506		Soil Sampling P3-9
8/25/2011		F19	408841	7596419		Soil Sampling P3-10
8/25/2011		F20	408794	7596452		Soil Sampling P3-11

APPENDIX C4

Site Photographs – East



Photo G1
Southwest view of ponded water
feature A



Photo G2
North-Northeast view of ponded
water feature A



Photo G3
East-Northeast view of south slope



Photo G4
Close up view of water staining



Photo G5
East view of ponded water feature B



Photo G6
West view of ponded water feature
B



Photo G7
North-Northwest view of
southwest slope



Photo G8
South view of southwest slope



Photo G9
South view of west slope



Photo G10
East view of north slope



Photo G11
North view of east slope



Photo G12
South view of east slope



Photo G13
West-southwest view of ponded
water feature D



Photo G14
West view of iron oxide stained area



Photo G15
East view of exposed debris on
ground adjacent to landfill



Photo G16
North view of stained rocks



Photo G17
South view of hydrocarbon sheen



Photo G18
Close up West view of iron oxide
stained area



Photo G19
West view of stained area

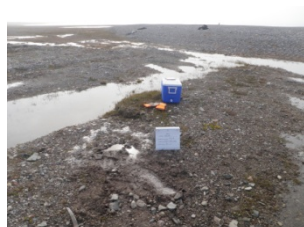


Photo G20
Soil Sampling
P3-9



Photo G21
Soil Sampling
P3-10



Photo G22
Soil Sampling
P3-11

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - South Landfill - East

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/25/2011	A	G1	408869	7596454	7	Southwest view of ponded water feature A
8/25/2011	A	G2	408871	7596464	7	North-northeast view of ponded water feature A
8/25/2011		G3	408828	7596440		East-northeast view of south slope
8/25/2011	A	G4	408848	7596435	1	Close up view of water staining
8/25/2011	B	G5	408797	7596450	2	East view of ponded water feature B
8/25/2011	B	G6	408814	7596455	2	West view of ponded water feature B
8/25/2011		G7	408817	7596444		North-northwest view of southwest slope
8/25/2011		G8	408805	7596463		South view of southwest slope
8/25/2011		G9	408803	7596502		South view of west slope
8/25/2011		G10	408822	7596517		East view of north slope
8/25/2011		G11	408871	7596464		North view of east slope
8/25/2011		G12	408881	7596479		South view of east slope
8/25/2011	D	G13	408863	7596448	4	West-southwest view of ponded water feature D
8/25/2011	D	G14	408845	7596442	1	West view of iron oxide stained area
8/25/2011	E	G15	408824	7596522	1	East view of exposed debris on ground adjacent to landfill
8/25/2011		G16	408845	7596442		North view of stained rocks
8/25/2011	C	G17	408854	7596442		South view of hydrocarbon sheen
8/25/2011		G18	408845	7596442		Close up view of iron oxide stained area
8/25/2011		G19	408845	7596442		West view of stained area

APPENDIX D

Landfill Monitoring Report – Non-hazardous Waste Landfill

D-1: Non-hazardous Waste Landfill

- D-1.1 Landfill Summary
- D-1.2 Visual Monitoring
- D-1.3 Soil Sampling
- D-1.4 Groundwater Monitoring and Sampling

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LIST OF APPENDICES

Appendix D1	Visual Inspection Records
Appendix D2	Site Photographs
Appendix D3	Monitoring Well Development Records

D1. NON-HAZARDOUS WASTE LANDFILL

D.1.1 Landfill Summary

The Non-hazardous Waste Landfill is located north of the airstrip between two access roads extending north-south between the airstrip and the main station. The landfill encompasses an area of approximately 5,000 m² and the depth of landfilled waste materials is approximately 2 m. The landfill configuration, including photograph and sample locations, is shown on Figure D1. Historically, this landfill was used to dispose of site debris, DCC Tier I and hydrocarbon (lubricating oil and grease) contaminated soil. The landfill was designed using perimeter berms and a cover of granular fill over the waste material. The cover of the landfill has sparse vegetation. The surface consists of a veneer of pebbles and cobbles overlying the granular and silt cover.

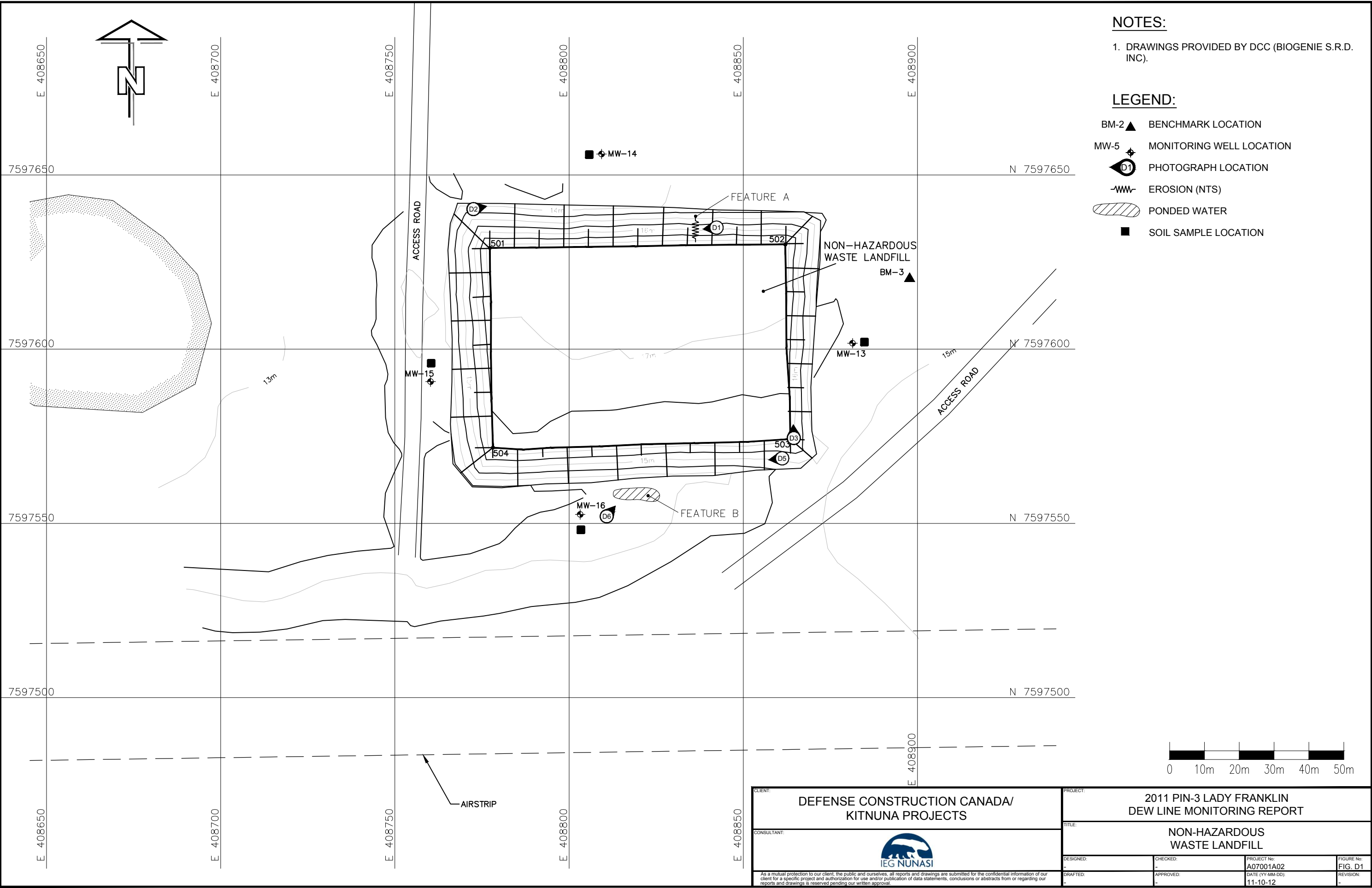
For 2011, the monitoring requirements for the Non-hazardous Waste Landfill included a visual inspection, soil sampling and analyses and groundwater sampling and analyses.

D.1.2 Visual Inspection

Based on the 2011 visual inspection, the Non-hazardous Waste Landfill area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. Compared to the 2005 visual inspection report, one additional feature was noted. There were no other significant changes from the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix D1 presents a summary of the 2011 visual inspection results and features of note are shown on Figure D1.

There was one minor erosion feature noted in 2005. In 2011, this feature was again observed (Feature A); however, it was interpreted to be a scour mark from an adjacent boulder.

An area of ponded water (Feature B) along the southern toe of the landfill was observed in 2011. The ponded water was approximately 3 m long and 3 m wide. The water did not have a visible sheen.



NOTES:

1. DRAWINGS PROVIDED BY DCC (BIOGENIE S.R.D. INC).

LEGEND:

- BM-2 ▲ BENCHMARK LOCATION
- MW-5 ⬮ MONITORING WELL LOCATION
- D1 PHOTOGRAPH LOCATION
- W-W- EROSION (NTS)
- PODED WATER
- SOIL SAMPLE LOCATION

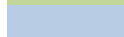
D.1.3 Soil Sampling

Soil samples were collected at the designated locations of MW-13, MW-14, MW-15 and MW-16. The sampling locations are shown on Figure D1. A photograph of each test pit for each location sampled is shown in Appendix D2. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table D-1 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in samples collected from the four locations. The greatest concentration of TPH was 714 mg/kg at MW-16 (0 m to 0.15 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

Table D-1. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - Non-hazardous Waste Landfill

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-035	MW-13	0-0.15	<2	0.1	74.3	2.7	7.2	<5	0.006	37.1	13.8	121	<0.45
SS11-036	MW-13	0.4-0.5	<2	0.1	83.4	3.2	8.2	<5	0.004	40.7	12.9	129	<0.45
SS11-037	MW-14	0-0.15	<2	0.1	<5	<1	5.1	<5	0.007	2.9	13.7	229	<0.45
SS11-038	MW-14	0.4-0.5	<2	0.1	41.0	1.4	5.9	<5	0.006	20.8	12.1	50	<0.45
SS11-039	MW-15	0-0.15	<2	<0.1	65.2	3.4	8.5	<5	0.005	33.9	16.3	57	<0.45
SS11-040	MW-15	0-0.15											
SS11-041	MW-15	0.4-0.5	<2	0.2	48.2	3.4	14.6	<5	0.010	26.3	19.3	127	<0.45
SS11-033	MW-16	0-0.15	<2	0.1	12.8	1.2	5.6	<5	0.021	9.0	17.6	714	<0.45
SS11-034	MW-16	0.3-0.4	<2	<0.1	16.3	1.5	3.0	<5	0.004	9.4	10.0	28	<0.45

 Indicates duplicate sample analysed by Maxxam
 Indicates duplicate sample analysed by Kaizen
 Indicates duplicate sample sent to ESG

D.1.4 Groundwater

Groundwater depths and condition were documented for monitoring wells MW-13, MW-14, MW-15 and MW-16. The monitoring well development records are provided in Appendix D3. The groundwater samples were analyzed for DCC metals, TPHs and PCBs. The results are presented in Table D-2 and the laboratory certificates are provided in Appendix G.

The monitoring wells were found to be in good condition in 2011. TPHs and PCBs were not detected in the groundwater samples collected from the Non-hazardous Waste Landfill. Detectable concentrations of the metals arsenic, chromium, cobalt, nickel and zinc were measured in one or more groundwater samples.

Table D-2. PIN-3 Lady Franklin Point, Summary of 2011 Groundwater Analysis - Non-Hazardous Waste Landfill

Sample ID	Location	Groundwater Elevation (masl)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Total Petroleum Hydrocarbons (mg/L)	PCB Total Aroclors (mg/L)
WS11-009	MW-13	13.62	<0.001	<0.0005	0.02	<0.001	<0.002	<0.001	<0.0001	0.005	0.12	<1.5	<0.00045
WS11-008	MW-14	13.25	<0.001	<0.0005	<0.02	<0.001	<0.002	<0.001	<0.0001	0.013	0.05	<1.5	<0.00045
WS11-007	MW-15	13.05	0.003	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.021	0.10	<1.5	<0.00045
WS11-006	MW-15	13.05	0.003	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.020	0.09	<1.5	<0.00045
WS11-006	MW-15	13.05	0.0007	0.000016	<0.001	0.0007	0.0022	0.0003	<0.000002	0.0075	<0.003	<0.3	<0.000050
WS11-010	MW-16	13.44	0.004	<0.0005	<0.02	<0.001	<0.002	<0.001	<0.0001	0.013	0.04	<1.5	<0.00045

Indicates duplicate sample analysed by Maxxam

Indicates duplicate sample analysed by Kaizen

APPENDIX D ATTACHMENTS

- D1 Visual Inspection Records**
- D2 Site Photographs**
- D3 Monitoring Well Development Records**

APPENDIX D1

Visual Inspection Records

Visual Inspection Checklist, PIN-3 Non-hazardous Waste Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION-LANDFILL MONITORING VISUAL INSPECTION CHECKLIST INSPECTION REPORT			
Site Name	PIN-3 Lady Franklin Point	Landfill Designation	Non-hazardous Waste Landfill
Date of Inspection	August 24, 2011	Date of Previous Inspection	2009
Inspected by	Jared Peterson	Report Prepared by	N/A

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature Present		Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement		N								
Erosion	A	Y	Eastern side of north slope	0.4	25.0	10.0	<1	Diagnosed in previous report as an erosion feature. Upon further investigation, feature appears to be scour mark from adjacent boulder	D1	
Frost Action		N								
Sloughing and Cracking		N								
Animal Burrows		N								
Vegetation		Y	Across landfill surface				<1	Sparse vegetation in some areas		
Staining		N								
Vegetation Stress		N								
Seepage Points		N								
Debris Exposed		N								
Presence/ Condition of Monitoring Instruments		Y	Various locations					Four monitoring wells in good condition	D11-D14	
Other Features of Note	B	Y	Southern toe					Ponded water	D6	

NSC - "No Significant Change"

Additional photos: D2,D3,D5, D7-D10

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Not observed	N/A
Erosion	Acceptable	Isolated
Frost Action	Not observed	N/A
Staining	Not observed	N/A
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Not observed	N/A
Overall Landfill Performance	Acceptable	

APPENDIX D2

Site Photographs

DEFENCE CONSTRUCTION CANADA / KITNUNA CORP.
2011 PIN-3 Lady Franklin DEW Line Monitoring Report



Photo D1
Close up view of erosion feature A



Photo D2
East view of north slope



Photo D3
North view of east slope



Photo D5
West view of South slope and toe



Photo D6
Ponded water looking northeast



Photo D7
Soil Sampling
MW-13



Photo D8
Soil Sampling
MW-14



Photo D9
Soil Sampling
MW-15

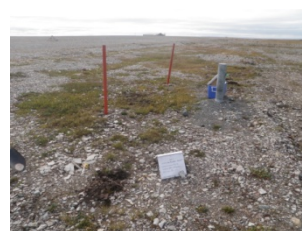


Photo D10
Soil Sampling
MW-16



Photo D11
Groundwater Sampling
MW-13



Photo D12
Groundwater Sampling
MW-14



Photo D13
Groundwater Sampling
MW-15



Photo D14
Groundwater Sampling
MW-16

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - Non-hazardous Waste Landfill

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/24/2011	A	D1	408842	7597635	<1	Close up view of erosion feature A
8/24/2011		D2	408773	7597640		East view of north slope
8/24/2011		D3	408864	7597574		North view of east slope
8/24/2011		D5	408861	7597569		West view of south slope and toe
8/24/2011		D6	408811	7597552		Ponded water looking northeast
8/24/2011		D7	408881	7597602	1	Soil Sampling MW-13
8/24/2011		D8	408809	7597656	2	Soil Sampling MW-14
8/24/2011		D9	408760	7597591	2	Soil Sampling MW-15
8/24/2011		D10	408803	7597553	2	Soil Sampling MW-16
8/24/2011		D11	408881	7597602	<1	Groundwater Sampling MW-13
8/24/2011		D12	408809	7597656	<1	Groundwater Sampling MW-14
8/24/2011		D13	408760	7597591	<1	Groundwater Sampling MW-15
8/24/2011		D14	408803	7597553	<1	Groundwater Sampling MW-16

APPENDIX D3

Monitoring Well Development Records

Monitoring Well Observations (MW-13)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	25-Aug-11	Time:	13:57
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-hazardous Waste Landfill		
Monitoring Well ID:	MW-13		
Sample Number:	WS11-009		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	40		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	150.4	Method:	interface meter
Static water level (cm) =	110.4		
Depth to bottom (cm) =	361.5	Evidence of sludge/siltation:	no
Depth of water (cm) =	211.1		
Well volume of water (mL) =	4144.94		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	8.08		
Conductivity (mS/cm) =	0.647		
Temperature (°C) =	4.8		

Monitoring Well Observations (MW-14)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	25-Aug-11	Time:	11:15
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-hazardous Waste Landfill		
Monitoring Well ID:	MW-14		
Sample Number:	WS11-008		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	49.5		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	103.2	Method:	interface meter
Static water level (cm) =	53.7		
Depth to bottom (cm) =	377	Evidence of sludge/siltation:	no
Depth of water (cm) =	273.8		
Well volume of water (mL) =	5376.05		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.27		
Conductivity (mS/cm) =	1.489		
Temperature (°C) =	5.9		

Monitoring Well Observations (MW-15)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3	Time:	9:40
Date of Sampling Event:	25-Aug-11		
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-hazardous Waste Landfill		
Monitoring Well ID:	MW-15		
Sample Number:	WS11-006		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	50		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	144.5	Method:	interface meter
Static water level (cm) =	94.5		
Depth to bottom (cm) =	357	Evidence of sludge/siltation:	no
Depth of water (cm) =	212.5		
Well volume of water (mL) =	4172.43		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	6.96		
Conductivity (mS/cm) =	3.75		
Temperature (°C) =	4.4		

Monitoring Well Observations (MW-16)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3	Time:	15:04
Date of Sampling Event:	25-Aug-11		
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-hazardous Waste Landfill		
Monitoring Well ID:	MW-16		
Sample Number:	WS11-010		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	69		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	98.3	Method:	interface meter
Static water level (cm) =	29.3		
Depth to bottom (cm) =	448	Evidence of sludge/siltation:	no
Depth of water (cm) =	349.7		
Well volume of water (mL) =	6866.34		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.24		
Conductivity (mS/cm) =	1.467		
Temperature (°C) =	6.3		

APPENDIX E

Landfill Monitoring Report – Tier II Soil Disposal Facility

E-1: Tier II Soil Disposal Facility

- E-1.1 Landfill Summary
- E-1.2 Visual Monitoring
- E-1.3 Soil Sampling
- E-1.4 Groundwater Monitoring and Sampling
- E-1.5 Thermal Monitoring

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Appendix E2	Site Photographs
Appendix E3	Monitoring Well Development Records
Appendix E4	Thermistor Maintenance Records
Appendix E5	Average Monthly Thermal Monitoring Data

E1. TIER II SOIL DISPOSAL FACILITY

E.1.1 Landfill Summary

The Tier II Soil Disposal Facility (SDF) is located south of the eastern extent of the airstrip. The Tier II SDF was constructed in 2004 to contain soil excavated during partial cleanup of the PIN-3 site. The landfill configuration, including photograph and sample locations, is shown on Figure E1. The Tier II SDF was constructed using a double containment system, including a liner system and placement of sufficient surficial fill to promote freezing of the landfilled wastes. The cover of the landfill has no vegetation. The surface consists of a veneer of pebbles and cobbles overlying the granular and silt cover.

For 2011, the monitoring requirements for the Tier II SDF included a visual inspection, soil sampling and analyses, groundwater sampling and analyses, and thermal monitoring.

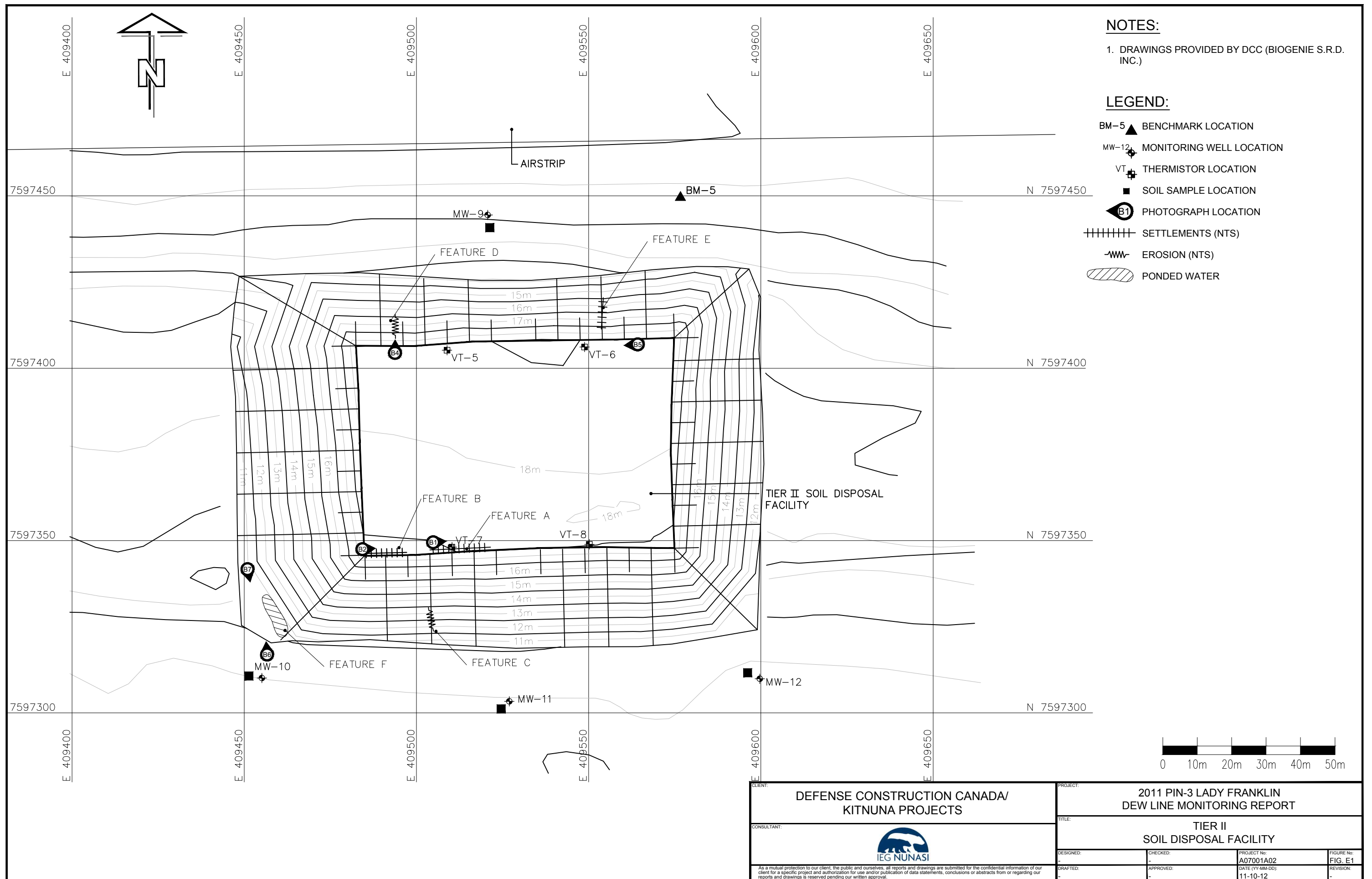
E.1.2 Visual Inspection

Based on the 2011 visual inspection, the Main Landfill area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. Compared to the 2005 visual inspection report, one additional minor settlement feature was noted. There were no other significant changes from the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix E1 presents a summary of the 2011 visual inspection results and features of note are shown on Figure E1.

There were two minor erosion features noted in 2005. In 2011, these features were again observed (Features C and D); however, they were interpreted to be scour marks from adjacent boulders.

Two minor settlement features were observed in 2005, and the same features were noted in 2011. Features A and B lengthened between 2005 and 2011; however, the other dimensions were similar. An additional settlement feature was observed in 2011 on the eastern side of the north slope. This settlement feature (Feature E) is approximately 7 m long and 0.3 m deep. The areas showing settlement should be monitored for increasing size.

An area of ponded water (Feature F) at the southwest corner of the landfill toe was observed in 2011. The ponded water was approximately 9 m long and 3 m wide. The water did not have a visible sheen.



E.1.3 Soil Sampling

Soil samples were collected at the designated locations of MW-9, MW-10, MW-11 and MW-12. The sampling locations are shown on Figure E1. A photograph of each test pit for each location sampled (with the exception of MW-12) is shown in Appendix E2. A photograph of location MW-12 was missed during the sampling program; however, the general area looked similar to previous sampling events. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table E-1 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in all of the soil samples collected and analyzed. The greatest concentration of TPH was 99 mg/kg at MW-11 (0 m to 0.15 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

Table E-1. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - Tier II Soil Disposal Facility

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-042	MW-9	0-0.15	<2	<0.1	20.7	3.2	9.3	<5	0.004	14.5	15.6	47	<0.45
SS11-043	MW-9	0-0.15											
SS11-044	MW-9	0.4-0.5	<2	<0.1	31.7	3.3	8.8	<5	0.004	19.6	13.8	53	<0.45
SS11-050	MW-10	0-0.15	<2	<0.1	16.2	2.4	5.1	<5	<0.004	10.8	10.1	74	<0.45
SS11-071	MW-10	0-0.15	<2	<0.1	13.8	2.1	5.1	<5	<0.004	8.4	8.8	<15	<0.45
SS11-051	MW-10	0.4-0.5	<2	<0.1	6.3	1.9	4.9	<5	<0.004	5.6	9.5	26	<0.45
SS11-072	MW-10	0.4-0.5	<2	<0.1	18.6	2	6.1	<5	<0.004	10.7	8.6	29	<0.45
SS11-048	MW-11	0-0.15	<2	<0.1	22.9	3.7	7.6	<5	0.004	12.1	46.9	99	<0.45
SS11-073	MW-11	0-0.15	<2	<0.1	6.4	1.6	4.3	<5	<0.004	4.9	8.6	33	<0.45
SS11-049	MW-11	0.4-0.5	<2	<0.1	<5	1.0	2.3	<5	<0.004	2.3	6.6	20	<0.45
SS11-074	MW-11	0.4-0.5	<2	<0.1	<5	1.3	3.7	<5	<0.004	3.4	7.6	<15	<0.45
SS11-045	MW-12	0-0.15	<2	<0.1	10.5	2.3	9.2	<5	<0.004	7.3	13.1	27	<0.45
SS11-046	MW-12	0-0.15											
SS11-047	MW-12	0.4-0.5	<2	<0.1	15.1	2.8	10.6	<5	<0.004	10.6	13.5	17	<0.45

Indicates duplicate sample analysed by Maxxam
Indicates duplicate sample analysed by Kaizen
Indicates duplicate sample sent to ESG

E.1.4 Groundwater

Groundwater depths and condition were documented for monitoring wells MW-9, MW-10, MW-11 and MW-12. The monitoring well development records are provided in Appendix E3. Monitoring wells MW-9 and MW-10 were dry and could not be sampled. The groundwater samples collected from monitoring wells MW-11 and MW-12 were analyzed for DCC metals, TPHs and PCBs. The results are presented in Table E-2 and the Laboratory Reports are provided in Appendix G.

The monitoring wells were found to be in good condition in 2011. TPHs and PCBs were not detected in the groundwater samples collected from the Tier II SDF. Detectable concentrations of the metals chromium, cobalt, copper, lead nickel and zinc were measured in one or more groundwater samples.

Table E-2. PIN-2 Lady Franklin Point, Summary of 2011 Groundwater Analysis - Tier II Soil Disposal Facility

Sample ID	Location	Groundwater Elevation (masl)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Total Petroleum Hydrocarbons (mg/L)	PCB Total Aroclors (mg/L)
Dry	MW-9	Dry	-	-	-	-	-	-	-	-	-	-	-
Dry	MW-10	Dry	-	-	-	-	-	-	-	-	-	-	-
WS11-011	MW-11	9.32	<0.001	<0.0005	0.06	<0.001	0.008	0.032	<0.0001	0.010	0.06	<1.5	<0.00045
WS11-013	MW-12	9.57	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.021	0.08	<1.5	<0.00045
WS11-012	MW-12	9.57	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.021	0.08	<1.5	<0.00045
WS11-012	MW-12	9.57	0.0003	0.000013	0.001	0.0005	0.0018	0.0003	<0.000002	0.0049	<0.003	<0.1	<0.000050

Indicates duplicate sample analysed by Maxxam

Indicates duplicate sample analysed by Kaizen

E.1.5 Thermal Monitoring

The manual readings taken from each thermistor (equipped with a data logger) at the Tier II SDF and the condition of each thermal installation are provided in the maintenance records located in Appendix E4. The data downloaded from the data loggers spanned from August 2009 to August 2011. The graphs for the thermal data are provided in Appendix E5. All dataloggers were reset and provided with new batteries in 2011.

Bead 10 of the thermistor VT-5 was found to be recording incorrectly. Data from this bead has not been included in the thermistor graph for this location.

APPENDIX E ATTACHMENTS

- E1 Visual Inspection Records**
- E2 Site Photographs**
- E3 Monitoring Well Development Records**
- E4 Thermistor Maintenance Records**
- E5 Thermistor Graphs**

APPENDIX E1

Visual Inspection Records

Visual Inspection Checklist, PIN-3 Tier II Soil Disposal Facility

DEW LINE CLEANUP: POST-CONSTRUCTION-LANDFILL MONITORING VISUAL INSPECTION CHECKLIST INSPECTION REPORT			
Site Name	PIN-3 Lady Franklin Point	Landfill Designation	Tier II Soil Disposal Facility
Date of Inspection	August 25, 2011	Date of Previous Inspection	2009
Inspected by	Jared Peterson	Report Prepared by	N/A

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature Present		Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement	A	Y	Southern crest	4.0	70.0	25.0	<1		B1	
	B	Y	Southwestern crest	3.0	50.0	25.0	<1		B2	
	E	Y	Eastern side of north slope	7.0	50.0	30.0	<1		B5	
Erosion	C	Y	South slope	0.3	30.0	10.0	<1	Diagnosed in previous report as an erosion feature. Upon further investigation, feature appears to be scour mark from adjacent boulder	B3	
	D	Y	Western side fo north slope	3.0	30.0	15.0	<1	Diagnosed in previous report as an erosion feature. Upon further investigation, feature appears to be scour mark from adjacent boulder	B4	
Frost Action		N								
Sloughing and Cracking		N								
Animal Burrows		N								
Vegetation		N								
Staining		N								
Vegetation Stress		N								
Seepage Points		N								
Debris Exposed		N								
Presence/ Condition of Monitoring Instruments		Y	Various locations					Four monitoring wells and four thermistors in good condition	B12-B14	
Other Features of Note	F	Y	Southwest corner of landfill					Ponded water	B6-B7	No visible sheen

NSC - "No Significant Change"

Additional photos: B8-B11

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Acceptable	Isolated
Erosion	Acceptable	Isolated
Frost Action	Not observed	N/A
Staining	Not observed	N/A
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Acceptable	Isolated
Debris exposure	Not observed	N/A
Overall Landfill Performance	Acceptable	

APPENDIX E2

Site Photographs



Photo B1
View of settlement feature A near
VT-7



Photo B2
View of settlement feature B near
southwest corner crest



Photo B4
View of erosion feature D near
northwest corner



Photo B5
West view of differential settlement
feature E on north crest and slope



Photo B6
North view of ponded area F at toe
of southwest corner



Photo B7
South view of ponded area F at toe
of southwest corner



Photo B8
Soil Sampling
MW-9



Photo B9
Soil Sampling
MW-10

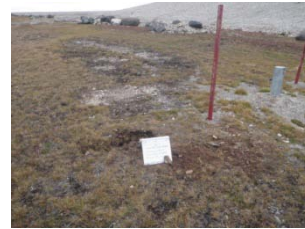


Photo B10
Soil Sampling
MW-11



Photo B11
Soil Sampling
MW-12



Photo B12
Groundwater Sampling
MW-9



Photo B13
Groundwater Sampling
MW-10



Photo B14
Groundwater Sampling
MW-11

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - Tier II Soil Disposal Facility

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/25/2011	A	B1	409505	7597349	1	View of settlement feature A near VT-7
8/25/2011	B	B2	409484	7597347	2	View of settlement feature B near southwest corner crest
8/25/2011	D	B4	409494	7597404	2	View of erosion feature D near northwest corner
8/25/2011	E	B5	409564	7597407	2	West view of differential settlement feature E on north crest and slope
8/25/2011	F	B6	409457	7597317	3	North view of ponded area F at the toe of southwest corner
8/25/2011	F	B7	409451	7597342	3	South view of ponded area F at toe of southwest corner
8/25/2011		B8	409521	7597444	2	Soil Sampling MW-9
8/25/2011		B9	409455	7597310	2	Soil Sampling MW-10
8/25/2011		B10	409527	7597303	2	Soil Sampling MW-11
8/25/2011		B11	409600	7597310	2	Soil Sampling MW-12
8/25/2011		B12	409521	7597444	<1	Groundwater Sampling MW-9
8/25/2011		B13	409455	7597310	<1	Groundwater Sampling MW-10
8/25/2011		B14	409527	7597303	<1	Groundwater Sampling MW-11

APPENDIX E3

Monitoring Well Development Records

Monitoring Well Observations (MW-9)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	25-Aug-11	Time:	17:05
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-9		
Sample Number:	Dry		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	36		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	Dry	Method:	interface meter
Static water level (cm) =	Dry		
Depth to bottom (cm) =	201.5	Evidence of sludge/siltation:	no
Depth of water (cm) =	Dry		
Well volume of water (mL) =	Dry		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	N	Procedure/Equipment:	N/A
Volume Purged Water (L)=	N/A		
Decontamination required: (Y/N)	N/A	Notes:	
Number washes:	N/A		N/A - Not applicable
Number rinses:	N/A		
pH =	N/A		
Conductivity (mS/cm) =	N/A		
Temperature (°C) =	N/A		

Monitoring Well Observations (MW-10)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3	Time:	17:11
Date of Sampling Event:	25-Aug-11		
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-10		
Sample Number:	Dry		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	70		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	Dry	Method:	interface meter
Static water level (cm) =	Dry		
Depth to bottom (cm) =	115	Evidence of sludge/siltation:	no
Depth of water (cm) =	Dry		
Well volume of water (mL) =	Dry		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	N	Procedure/Equipment:	N/A
Volume Purged Water (L)=	N/A		
Decontamination required: (Y/N)	N/A	Notes:	
Number washes:	N/A		N/A - Not applicable
Number rinses:	N/A		
pH =	N/A		
Conductivity (mS/cm) =	N/A		
Temperature (°C) =	N/A		

Monitoring Well Observations (MW-11)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3	Time:	17:22
Date of Sampling Event:	25-Aug-11		
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-11		
Sample Number:	WS11-011		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	38		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	133.2	Method:	interface meter
Static water level (cm) =	95.2		
Depth to bottom (cm) =	189.1	Evidence of sludge/siltation:	no
Depth of water (cm) =	55.9		
Well volume of water (mL) =	1097.59		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.73		
Conductivity (mS/cm) =	1.511		
Temperature (°C) =	4.1		

Monitoring Well Observations (MW-12)

Development of Monitoring Wells (2011)			
Site Name:	PIN-3		
Date of Sampling Event:	25-Aug-11	Time:	18:50
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-12		
Sample Number:	WS11-012		
Condition of Well:	Good		
Measured Data			
Well height above ground (cm) =	56		
Diameter of well (cm) =	5		
Depth of installation (cm) =	350		
Length screened section (cm) =	200		
Depth to top of screen (cm) =	50		
Depth to water surface (cm) =	139	Method:	interface meter
Static water level (cm) =	83		
Depth to bottom (cm) =	227.6	Evidence of sludge/siltation:	no
Depth of water (cm) =	88.6		
Well volume of water (mL) =	1739.66		
Free product thickness (mm) =	N/A	Method:	interface meter
Purging: (Y/N)	Y	Procedure/Equipment:	peristaltic pump, pH/EC/temperature meter, turbidity meter
	One well		
Volume Purged Water (L)=	volume		
Decontamination required: (Y/N)	Y	Notes:	
Number washes:	1		N/A - Not applicable
Number rinses:	2		
pH =	7.34		
Conductivity (mS/cm) =	2.79		
Temperature (°C) =	3.9		

APPENDIX E4

Thermistor Maintenance Records

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name:	IEG Nunasi Consultants	Inspection Date:	25-Aug-11
Prepared By:	Ryan Lennie		

Thermistor Information

Site Name:	PIN-3	Thermistor Location	Tier II Soil Disposal Facility
Thermistor Number:	VT-5	Inclination	Vertical
Install Date:	9-Sep-03	First Date Event	Last Date Event
Coordinates and Elevation	N 9430.72	E 10848.42	Elev 18.5
Length of Cable (m)	11.5	Cable Lead Above Ground	0
Datalogger Serial #	108066	Nodal Points	16
		Cable Serial Number	1611

Code PIN-3VT-5

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	
Cover	X	
Data Logger		X Earth ground screw missing
Cable	X	
Beads		X Bead 10 (see below)
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 12.70 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9240	11.6
2	8994	12.2
3	8736	12.8
4	10790	8.3
5	11780	6.5
6	12850	4.7
7	14480	2.3
8	17220	-1.0

Bead	ohms	Degrees C
9	18100	-2.0
10	1400	42.7
11	19920	-3.8
12	20630	-4.5
13	21380	-5.2
14	22130	-5.8
15	23200	-6.7
16	24310	-7.6

Observations and Proposed Maintenance

Memory 82% full
Bead 10 has been recording erratically since February 20, 2011

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name: IEG Nunasi Consultants	Inspection Date: 25-Aug-11
Prepared By: Ryan Lennie	

Thermistor Information

Site Name:	PIN-3	Thermistor Location	Tier II Soil Disposal Facility
Thermistor Number:	VT-6	Inclination	Vertical
Install Date:	8-Sep-03	First Date Event	Last Date Event
Coordinates and Elevation	N	9431.74	E 10888.36 Elev 18.5
Length of Cable (m)	11.5	Cable Lead Above Ground	4.5 Nodal Points 16
Datalogger Serial #	111096	Cable Serial Number	1612

Code PIN-3 VT-6

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	☐
Cover	X	☐
Data Logger	X	☐
Cable	X	☐
Beads	X	☐
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 13.06 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9128	11.8
2	10770	8.3
3	8820	12.6
4	10350	9.2
5	12060	6.0
6	13360	3.9
7	15560	0.9
8	17490	-1.3

Bead	ohms	Degrees C
9	18210	-2.1
10	18900	-2.8
11	19790	-3.7
12	20670	-4.5
13	21400	-5.2
14	22070	-5.8
15	23290	-6.8
16	24160	-7.5

Observations and Proposed Maintenance

Memory 82% full.

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name:	IEG Nunasi Consultants	Inspection Date:	25-Aug-11
Prepared By:	Ryan Lennie		

Thermistor Information

Site Name:	PIN-3	Thermistor Location	Tier II Soil Disposal Facility	
Thermistor Number:	VT-7	Inclination	Vertical	
Install Date:	10-Sep-03	First Date Event	Last Date Event	
Coordinates and Elevation	N	9373.65	E	10849.85 Elev 17.4
Length of Cable (m)	10.5	Cable Lead Above Ground	0	Nodal Points 16
Datalogger Serial #	111099	Cable Serial Number	1613	

Code PIN-3VT-7

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	
Cover	X	
Data Logger		X Earth ground screw missing and hole stripped
Cable	X	
Beads	X	
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 12.70 V

Manual Ground Temperature Readings

A	Bead	ohms	Degrees C	B	Bead	ohms	Degrees C
	1	8680	12.9		9	18720	-2.6
	2	9680	10.6		10	19600	-3.5
	3	11570	6.9		11	20500	-4.4
	4	12620	5.1		12	21150	-4.9
	5	13820	3.3		13	21820	-5.5
	6	16310	0.0		14	22430	-6.1
	7	17140	-0.9		15	22910	-6.5
	8	17820	-1.7		16	23130	-6.7

Observations and Proposed Maintenance

Memory 82% full

Thermal Monitoring Thermistor Annual Maintenance Report

Contractor Name:	IEG Nunasi Consultants	Inspection Date:	25-Aug-11
Prepared By:	Ryan Lennie		

Thermistor Information

Site Name:	PIN-3	Thermistor Location	Tier II Soil Disposal Facility	
Thermistor Number:	VT-8	Inclination	Vertical	
Install Date:	9-Sep-03	First Date Event	Last Date Event	
Coordinates and Elevation	N	9374.48	E	10889.74 Elev 17.4
Length of Cable (m)	10.5	Cable Lead Above Ground	3.5	Nodal Points 16
Datalogger Serial #	111091	Cable Serial Number	1614	

Code PIN-3VT-8

Thermistor Inspection

	Good	Needs Maintenance
Casing	X	
Cover	X	
Data Logger	X	
Cable	X	
Beads	X	
Battery Installation Date	25-Aug-11	
Battery Levels	Main 11.34 V	Aux 12.65 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8415	13.5
2	9865	10.2
3	11550	6.9
4	12430	5.4
5	13740	3.4
6	16330	0.0
7	17370	-1.2
8	18090	-2.0

Bead	ohms	Degrees C
9	18880	-2.8
10	19710	-3.6
11	20520	-4.4
12	20990	-4.8
13	22060	-5.7
14	22570	-6.2
15	23040	-6.5
16	23430	-6.9

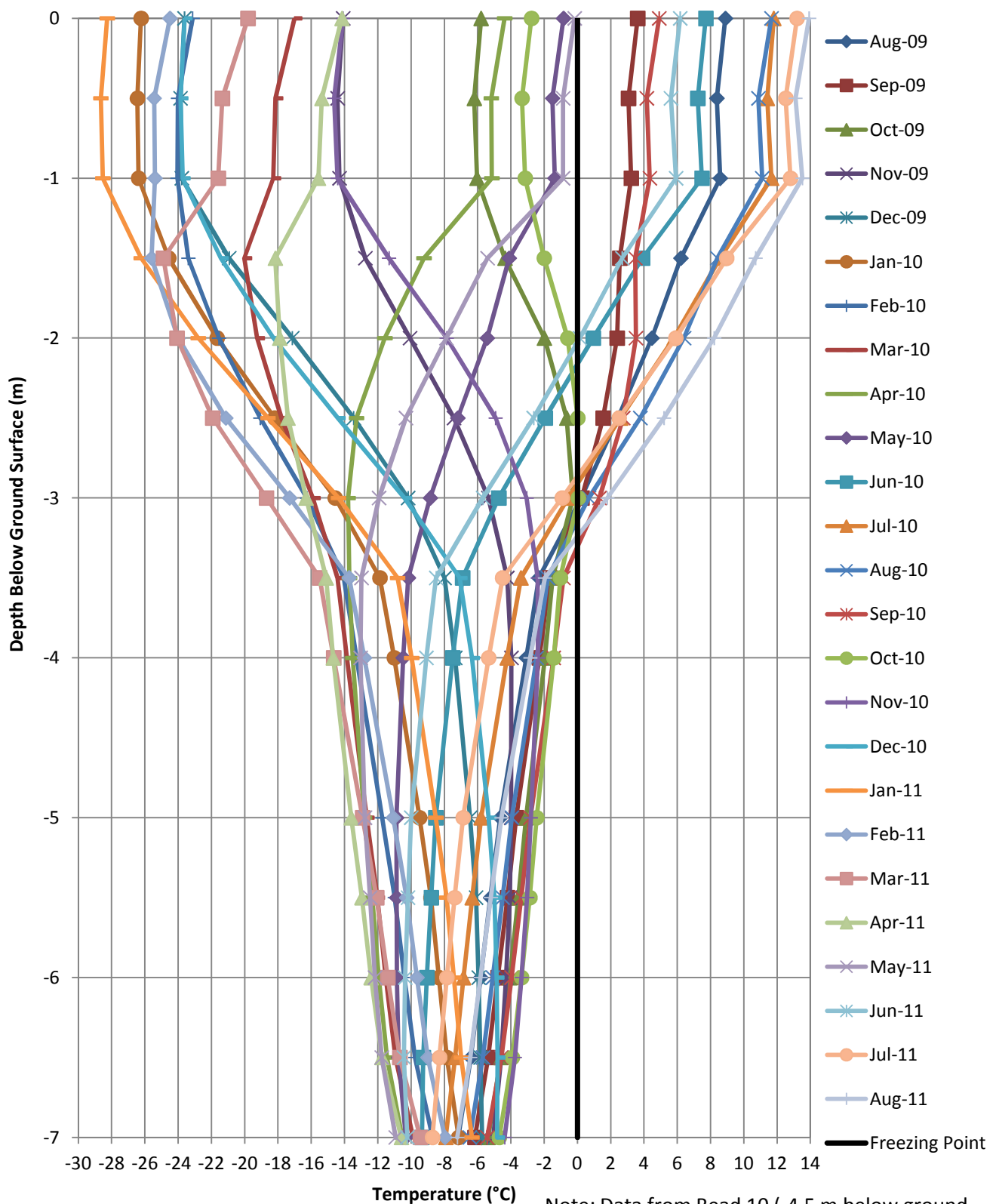
Observations and Proposed Maintenance

Memory 82% full

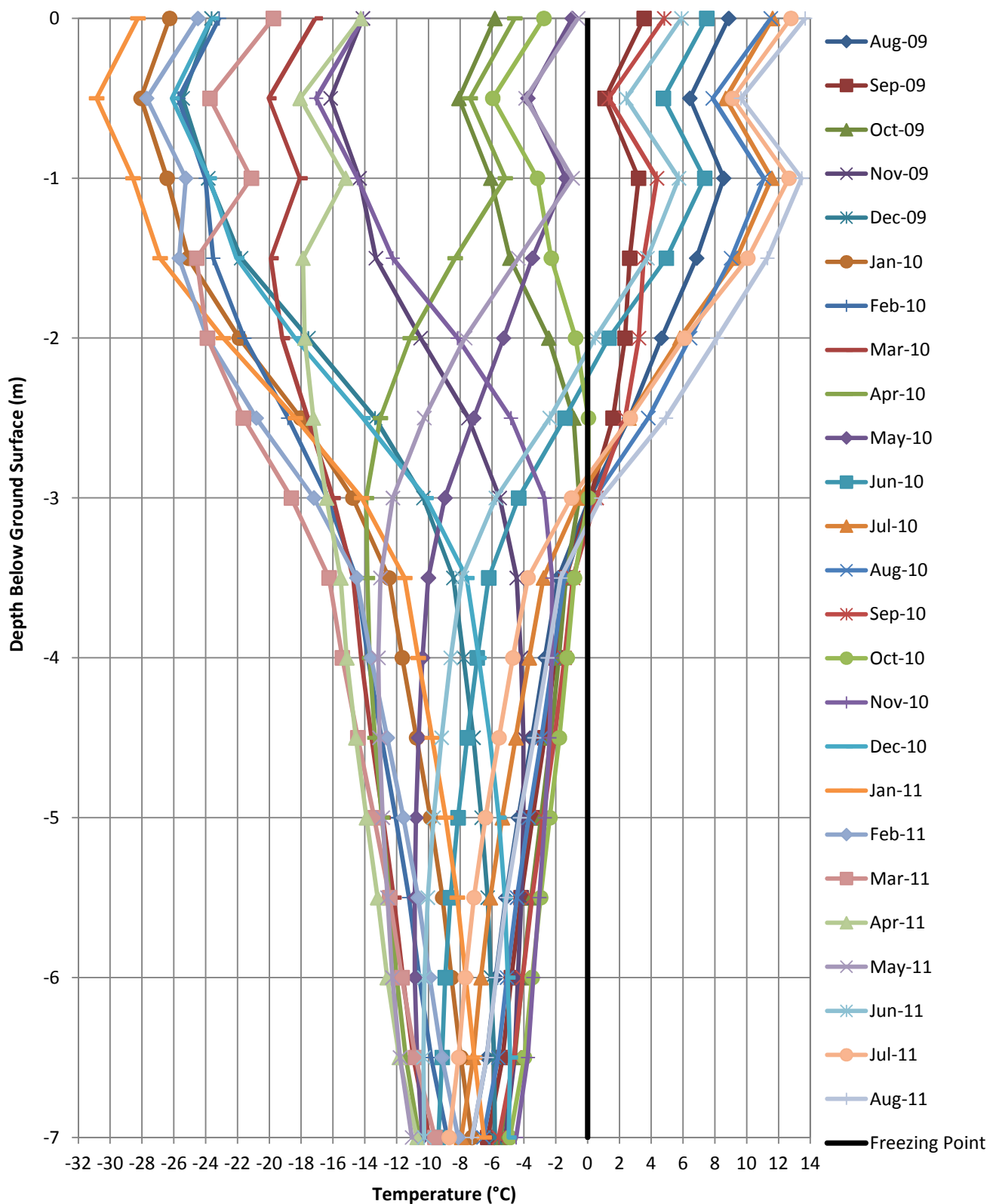
APPENDIX E5

Thermistor Graphs

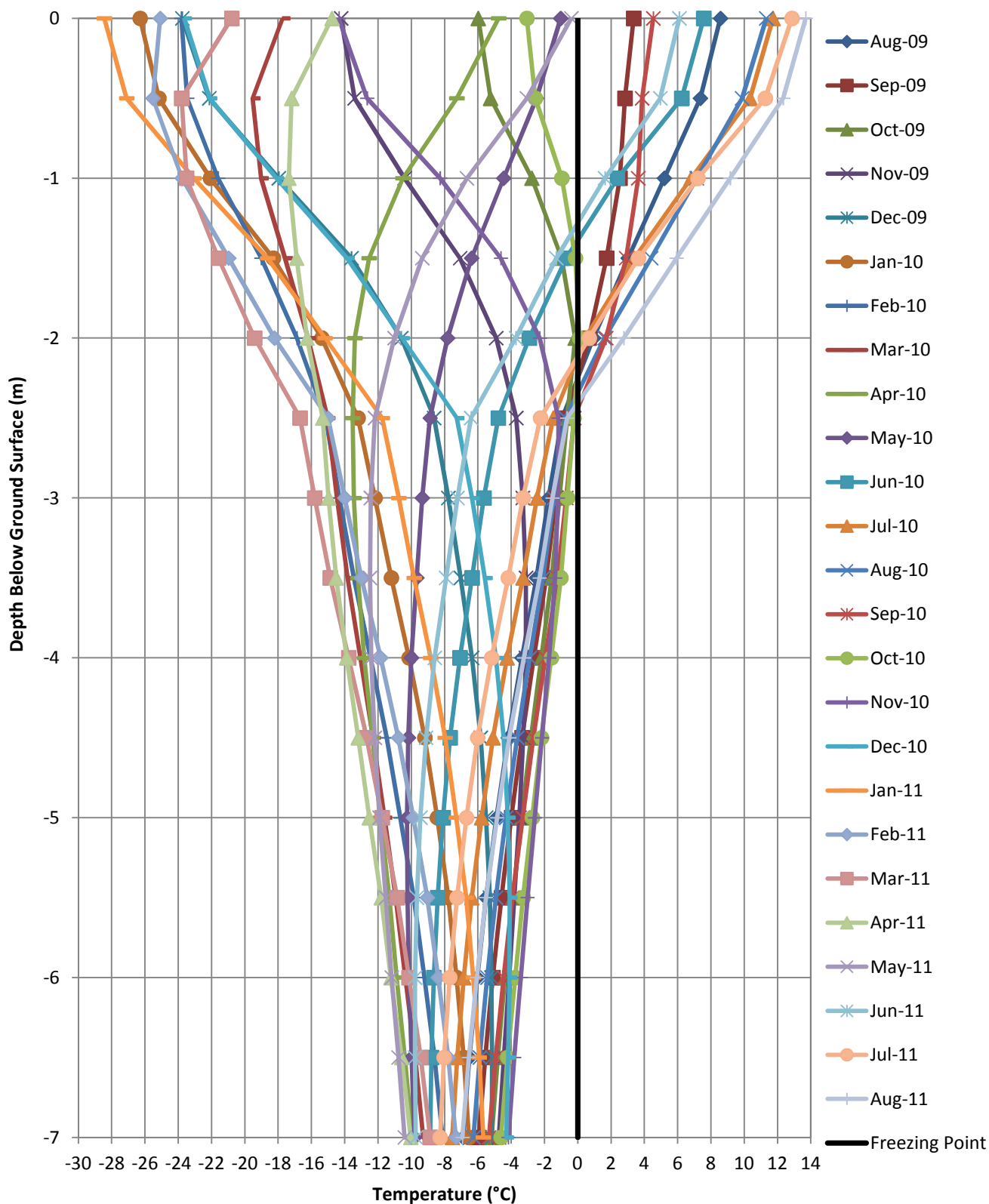
Average Monthly Thermal Monitoring Data Thermistor VT-5



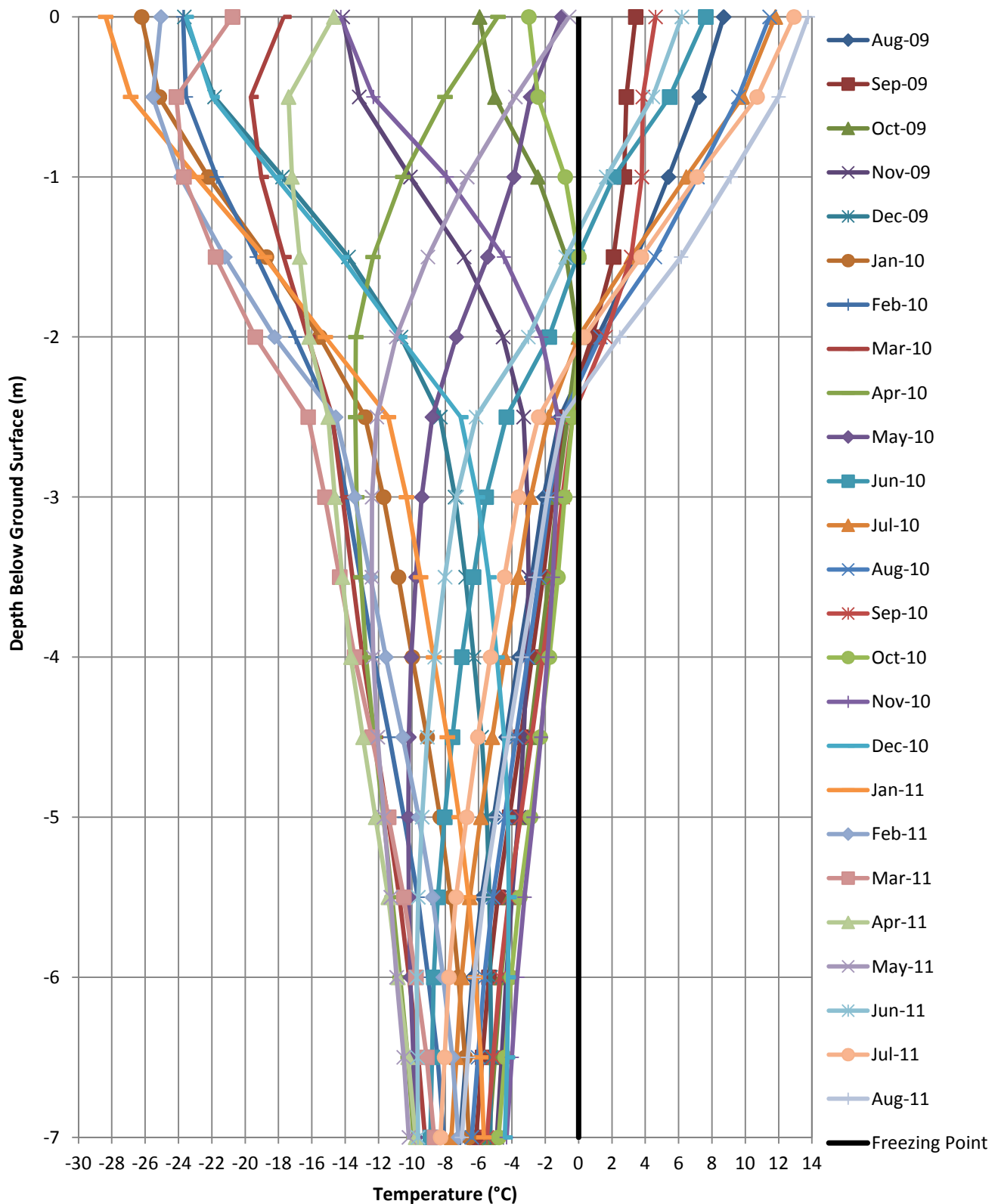
Average Monthly Thermal Monitoring Data Thermistor VT-6



Average Monthly Thermal Monitoring Data Thermistor VT-7



Average Monthly Thermal Monitoring Data Thermistor VT-8



APPENDIX F

Landfill Monitoring Report – North Landfill

F-1: North Landfill

- F-1.1 Landfill Summary**
- F-1.2 Visual Monitoring**
- F-1.3 Soil Sampling**

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Appendix F1	Visual Inspection Records
Appendix F2	Site Photographs

F1. NORTH LANDFILL

F.1.1 Landfill Summary

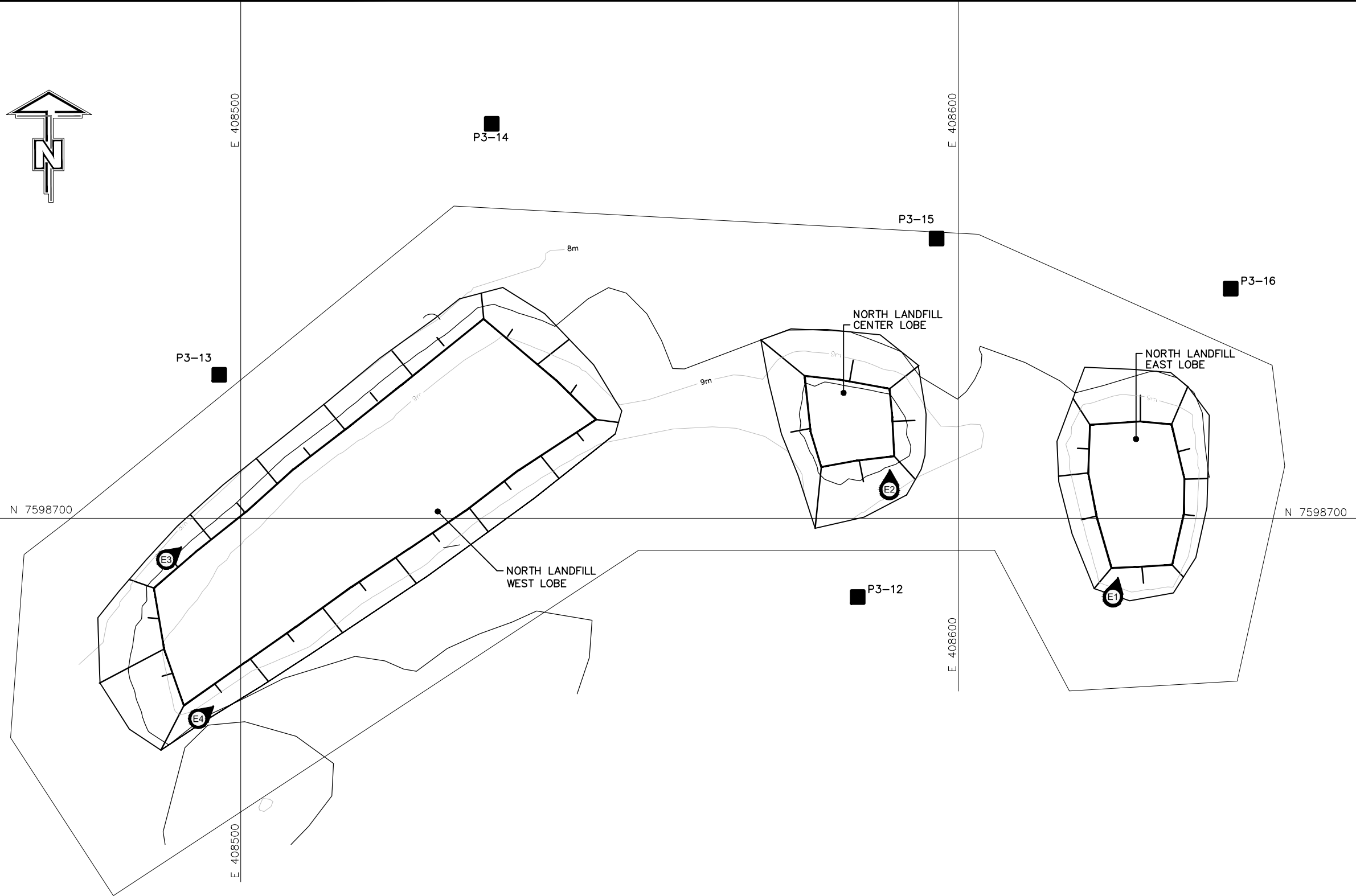
The North Landfill is located approximately 650 m north-norhtwest of the main station and encompasses an area of approximately 28,000 m². The landfill is comprised of three lobes. The depth of landfilled waste materials is approximately 1 m. The landfill configuration, including photograph and sample locations, is shown on Figure F1. DCC classified this landfill as a low potential environmental risk and remediation of this landfill included removal of scattered surface debris and regrading with additional granular fill. The cover of the landfill has no vegetation. The surface consists of a veneer of pebbles and cobbles overlying the granular and silt cover.

For 2011, the monitoring requirements for the North Landfill included a visual inspection and soil sampling and analyses.

F.1.2 Visual Inspection

Based on the 2011 visual inspection, the NWS Landfill area appears to be in good condition and does not exhibit signs of imminent slope instability or final cover failure. There were no changes compared to the 2005 visual inspection and the overall landfill performance is considered to be “acceptable”. Appendix F1 presents a summary of the 2011 visual inspection results.

There were no erosion, settlement, frost action, burrowing, vegetative stress, seepage/ponded water, staining or debris features observed in 2005 or 2011.

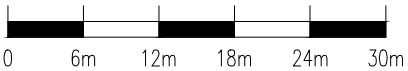


NOTES:

1. DRAWINGS PROVIDED BY DCC (BIOGENIE S.R.D. INC.)

LEGEND:

- SOIL SAMPLE LOCATION
- ⬮ E1 PHOTOGRAPH LOCATION



CLIENT: DEFENSE CONSTRUCTION CANADA/ KITNUNA PROJECTS		PROJECT: 2011 PIN-3 LADY FRANKLIN DEW LINE MONITORING REPORT	
CONSULTANT: 		TITLE: NORTH LANDFILL	
DESIGNED: -	CHECKED: -	PROJECT No: A07001A02	FIGURE No: FIG. F1
DRAFTED: -	APPROVED: -	DATE (YY-MM-DD): 11-10-12	REVISION: -

F.1.3 Soil Sampling

Soil samples were collected at the designated locations of P3-12, P3-13, P3-14, P3-15 and P3-16. The sampling locations are shown on Figure F1. A photograph of each test pit for each location sampled is shown in Appendix F2. Soil samples were analyzed for DCC metals, total petroleum hydrocarbons (TPHs) and polychlorinated biphenyls (PCBs). Analytical results and depths of samples are provided in Table F-1 and the Laboratory Reports are provided in Appendix G.

TPHs were detected in samples collected from the five locations. The greatest concentration of TPH was 312 mg/kg at P3-14 (0 m to 0.15 m). The analytical results for metals and PCBs in soil samples were less than the DCC DEW Line Cleanup Criteria for soil (DCC Criteria).

Table F-1. PIN-3 Lady Franklin Point, Summary of 2011 Soil Analysis - North Landfill

Sample ID	Sample Location	Depth (m)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
SS11-001	P3-12	0-0.15	<2	<0.1	7.8	1.8	4.0	<5	<0.004	6.4	12.6	26	<0.45
SS11-002	P3-12	0.4-0.5	<2	0.1	10.1	2.1	4.1	<5	0.005	8.1	13.8	43	<0.45
SS11-003	P3-13	0-0.15	<2	<0.1	14.1	<1	<2	<5	0.004	9.4	7.3	116	<0.45
SS11-004	P3-13	0.4-0.5	<2	<0.1	14.4	<1	<2	<5	0.004	11.2	7.4	105	<0.45
SS11-005	P3-14	0-0.15	<2	0.2	6.7	<1	3.5	<5	0.020	5.8	12.9	312	<0.45
SS11-006	P3-14	0.3-0.4	<2	<0.1	6.9	<1	2.9	<5	0.008	6.5	9.7	206	<0.45
SS11-010	P3-15	0-0.15	<2	<0.1	10.6	1.1	2.8	<5	0.005	8.5	11.4	282	<0.45
SS11-011	P3-15	0.4-0.5	<2	<0.1	8.2	1.2	2.5	<5	0.004	7.7	10.9	103	<0.45
SS11-007	P3-16	0-0.15	<2	<0.1	6.6	1.1	8.0	<5	0.007	10.7	7.7	171	<0.45
SS11-008	P3-16	0.4-0.5	<2	<0.1	15.0	1.5	3.2	<5	<0.004	11.1	10.1	43	<0.45
SS11-009	P3-16	0.4-0.5	<1	<0.1	5	2	<5	2	<0.05	4	<10	<42	<0.010

	Indicates duplicate sample analysed by Maxxam
	Indicates duplicate sample analysed by Kaizen
	Indicates duplicate sample sent to ESG

APPENDIX F ATTACHMENTS

- F1 Visual Inspection Records**
- F2 Site Photographs**

APPENDIX F1

Visual Inspection Records

Visual Inspection Checklist, PIN-3 North Landfill

DEW LINE CLEANUP: POST-CONSTRUCTION-LANDFILL MONITORING VISUAL INSPECTION CHECKLIST INSPECTION REPORT			
Site Name	PIN-3 Lady Franklin Point	Landfill Designation	North Landfill
Date of Inspection	August 24, 2011	Date of Previous Inspection	August 23-25, 2005
Inspected by	Jared Peterson	Report Prepared by	Samuel Proskin

The inspector/ reporter represents to the best of their knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Checklist Item	Feature Present	Location	Length (m)	Width (cm)	Depth (cm)	Extent relative to Area of Landfill (%)	Description	Photo Reference	Additional Comments
Settlement	N								
Erosion	N								
Frost Action	N								
Sloughing and Cracking	N								
Animal Burrows	N								
Vegetation	Y	Across landfill surface				<1	Sparse vegetation in some areas		
Staining	N								
Vegetation Stress	N								
Seepage Points	N								
Debris Exposed	N								
Presence/ Condition of Monitoring Instruments	N								
Other Features of Note	N								

NSC - "No Significant Change"

Additional photos: E1-E4,E6-E10

Preliminary Stability Assessment		
Feature	Severity Rating	Extent
Settlement	Not observed	N/A
Erosion	Not observed	N/A
Frost Action	Not observed	N/A
Staining	Not observed	N/A
Vegetation Stress	Not observed	N/A
Seepage/Ponded Water	Not observed	N/A
Debris exposure	Not observed	N/A
Overall Landfill Performance	Acceptable	

APPENDIX F2

Site Photographs



Photo E1
North view of east regraded area



Photo E2
North view of central regraded area



Photo E3
Northeast view of west regraded area from northwest corner



Photo E4
West view of south slope and toe



Photo E6
Soil Sampling
P3-12



Photo E7
Soil Sampling
P3-13

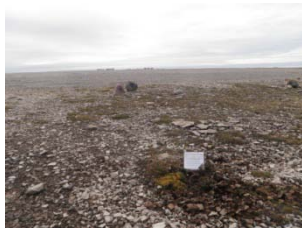


Photo E8
Soil Sampling
P3-14



Photo E9
Soil Sampling
P3-15



Photo E10
Soil Sampling
P3-16

DEFENCE CONSTRUCTION CANADA/KITNUNA PROJECTS

2011 PIN-3 Lady Franklin DEW Line Monitoring Report

PIN-3 Lady Franklin Point Photographic Log - North Landfill

Date	Feature Letter	Photo Number	Easting	Northing	Distance to Feature (m)	Description
8/24/2011		E1	408622	7598689		North view of east regraded area
8/24/2011		E2	408590	7598704		North view of central regraded area
8/24/2011		E3	408490	7598694		Northeast view of west regraded area from northwest corner
8/24/2011		E4	408494	7598672		West view of south slope and toe
8/24/2011		E6	408586	7598689	2	Soil Sampling P3-12
8/24/2011		E7	408497	7598720	2	Soil Sampling P3-13
8/24/2011		E8	408535	7598755	2	Soil Sampling P3-14
8/24/2011		E9	408597	7598739	2	Soil Sampling P3-15
8/24/2011		E10	408638	7598732	2	Soil Sampling P3-16

APPENDIX G

Laboratory Reports

ANALYTICAL DATA REPORT

Client Company: IEG Nunasi c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132941

Client Contact: Jeff Whitter

Date Reported: Sep 06 2011

Client Project #: A07001A02

Sample ID: 132941-1, WS11-001

Date Sampled: Aug 24, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.024	0.001
Total Zinc (Zn)	mg/L	0.08	0.02

Sample ID: 132941-2, WS11-002

Date Sampled: Aug 24, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Sample ID: 132941-2, WS11-002

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.022	0.001
Total Zinc (Zn)	mg/L	0.06	0.02

Sample ID: 132941-3, WS11-003

Date Sampled: Aug 24, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Sample ID: 132941-3, WS11-003

Date Sampled: Aug 24, 2011

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	<0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.004	0.001
Total Zinc (Zn)	mg/L	0.02	0.02

Sample ID: 132941-4, WS11-004

Date Sampled: Aug 24, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.002	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.038	0.001
Total Zinc (Zn)	mg/L	0.07	0.02

Sample ID: 132941-5, WS11-005

Date Sampled: Aug 24, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Sample ID: 132941-5, WS11-005

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.014	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.178	0.001
Total Zinc (Zn)	mg/L	0.07	0.02

Sample ID: 132941-6, WS11-006

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Sample ID: 132941-6, WS11-006

Date Sampled: Aug 25, 2011

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	0.003	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.020	0.001
Total Zinc (Zn)	mg/L	0.09	0.02

Sample ID: 132941-7, WS11-007

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	0.003	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.021	0.001
Total Zinc (Zn)	mg/L	0.10	0.02

Sample ID: 132941-8, WS11-008

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Sample ID: 132941-8, WS11-008

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	<0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.013	0.001
Total Zinc (Zn)	mg/L	0.05	0.02

Sample ID: 132941-9, WS11-009

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Sample ID: 132941-9, WS11-009

Date Sampled: Aug 25, 2011

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	0.02	0.02
Total Cobalt (Co)	mg/L	<0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.005	0.001
Total Zinc (Zn)	mg/L	0.12	0.02

Sample ID: 132941-10, WS11-010

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	0.004	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	<0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.013	0.001
Total Zinc (Zn)	mg/L	0.04	0.02

Sample ID: 132941-11, WS11-011

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Sample ID: 132941-11, WS11-011

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	0.06	0.02
Total Cobalt (Co)	mg/L	<0.001	0.001
Total Copper (Cu)	mg/L	0.008	0.002
Total Lead (Pb)	mg/L	0.032	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.010	0.001
Total Zinc (Zn)	mg/L	0.06	0.02

Sample ID: 132941-12, WS11-012

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Sample ID: 132941-12, WS11-012

Date Sampled: Aug 25, 2011

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.021	0.001
Total Zinc (Zn)	mg/L	0.08	0.02

Sample ID: 132941-13, WS11-013

Date Sampled: Aug 25, 2011

Package Name: Total Petroleum Hydrocarbons in Water

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	0.5
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	1
Total Petroleum Hydrocarbons (C6-C30)	mg/L	<1.5	1.5

Package Name: Polychlorinated Biphenyls (PCBs) in water

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/L	<0.00005	0.00005
Aroclor 1221	mg/L	<0.00005	0.00005
Aroclor 1232	mg/L	<0.00005	0.00005
Aroclor 1242	mg/L	<0.00005	0.00005
Aroclor 1248	mg/L	<0.00005	0.00005
Aroclor 1254	mg/L	<0.00005	0.00005
Aroclor 1260	mg/L	<0.00005	0.00005
Aroclor 1262	mg/L	<0.00005	0.00005
Aroclor 1268	mg/L	<0.00005	0.00005
Total PCB's	mg/L	<0.00045	0.00045

Package Name: Total Metals in Water (DCC)

Parameter Name	Units	Results	Detection Limit
Total Arsenic (As)	mg/L	<0.001	0.001
Total Cadmium (Cd)	mg/L	<0.0005	0.0005
Total Chromium (Cr)	mg/L	<0.02	0.02
Total Cobalt (Co)	mg/L	0.001	0.001
Total Copper (Cu)	mg/L	<0.002	0.002
Total Lead (Pb)	mg/L	<0.001	0.001
Total Mercury (Hg)	mg/L	<0.0001	0.0001
Total Nickel (Ni)	mg/L	0.021	0.001
Total Zinc (Zn)	mg/L	0.08	0.02

Comments:

Test Methodologies*:

PCBs (water): Based on EPA 3510/8270 by GC/MS

Total Extractables Hydrocarbons (water): Based on EPA 3510C and 8015C

Total Mercury (water): Based on APHA 3030E and APHA 3112 by Cold Vapor Atomic Fluorescence

Total Metals (water): Based on APHA 3030E, APHA 3120 by ICP-OES and APHA 3125 by ICP-MS

Total Purgeables (water): Based on EPA 5035, 8015 & 8020

TPH (water): Based on USEPA SW-846 5035, 3510C, 8015C

QA/QC Reviewed By: _____



Lab Manager: _____

A. Salcedo

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

*Detailed test methodologies and QA/QC data available upon request.

QUALITY CONTROL REPORT

Client Company: IEG Nunasi c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132941

Client Contact: Jeff Whitter

Date Reported: Sep 06 2011

Client Project #: A07001A02

Parameter Name	Units	Method Blank	Calibration Verification Standard		Laboratory Control Sample		Duplicate or Matrix Spike Duplicate	
			% Recovery		% Recovery		% Rel. Dif.	
Total Purgeable Hydrocarbons (C6-C10)	mg/L	<0.5	111	Pass	92	Pass	11	Pass
Total Extractable Hydrocarbons (C11-C30)	mg/L	<1	102	Pass	97	Pass	2	Pass
Aroclor 1232	mg/L	<0.00005	83	Pass	83	Pass	4	Pass
Aroclor 1248	mg/L	<0.00005	101	Pass	97	Pass	16	Pass
Aroclor 1260	mg/L	<0.00005	100	Pass	105	Pass	18	Pass
Total PCB's	mg/L	<0.00045	94	Pass	95	Pass	13	Pass
Total Arsenic (As)	mg/L	<0.001	105	Pass	105	Pass	N/A-DL	Pass
Total Cadmium (Cd)	mg/L	<0.0005	101	Pass	101	Pass	N/A-DL	Pass
Total Chromium (Cr)	mg/L	<0.02	102	Pass	102	Pass	N/A-DL	Pass
Total Cobalt (Co)	mg/L	<0.001	101	Pass	101	Pass	N/A-DL	Pass
Total Copper (Cu)	mg/L	<0.002	101	Pass	101	Pass	1	Pass
Total Lead (Pb)	mg/L	<0.001	100	Pass	100	Pass	N/A-DL	Pass
Total Mercury (Hg)	mg/L	<0.0001	92	Pass	92	Pass	N/A-DL	Pass
Total Nickel (Ni)	mg/L	<0.001	101	Pass	101	Pass	1	Pass
Total Zinc (Zn)	mg/L	<0.02	99	Pass	99	Pass	N/A-DL	Pass

QA/QC Reviewed By: _____



Lab Manager: _____

A. Salcedo

N/A-DL = Not Applicable - result is less than the detection limit or less than ten times the detection limit

*Detailed test methodologies available upon request

ANALYTICAL DATA REPORT

Client Company: IEG Consultants c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132938-A

Client Contact: Jeff Whitter

Date Reported: Sep 07 2011

Client Project #: A07001A02

Sample ID: 132938-A-1, [1] SS11-001

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	26	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	26	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	7.8	5
Cobalt	mg/kg	1.8	1
Copper	mg/kg	4.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	6.4	2
Zinc	mg/kg	12.6	5

Sample ID: 132938-A-2, [2] SS11-002

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05

Sample ID: 132938-A-2, [2] SS11-002

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	43	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	43	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	10.1	5
Cobalt	mg/kg	2.1	1
Copper	mg/kg	4.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.005	0.004
Nickel	mg/kg	8.1	2
Zinc	mg/kg	13.8	5

Sample ID: 132938-A-3, [3] SS11-003

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	116	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	116	15

Sample ID: 132938-A-3, [3] SS11-003

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	14.1	5
Cobalt	mg/kg	<1	1
Copper	mg/kg	<2	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	9.4	2
Zinc	mg/kg	7.3	5

Sample ID: 132938-A-4, [4] SS11-004

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	105	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	105	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	14.4	5
Cobalt	mg/kg	<1	1
Copper	mg/kg	<2	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	11.2	2
Zinc	mg/kg	7.4	5

Sample ID: 132938-A-5, [5] SS11-005

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-A-5, [5] SS11-005

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	312	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	312	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.2	0.1
Chromium	mg/kg	6.7	5
Cobalt	mg/kg	<1	1
Copper	mg/kg	3.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.020	0.004
Nickel	mg/kg	5.8	2
Zinc	mg/kg	12.9	5

Sample ID: 132938-A-6, [6] SS11-006

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	206	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	206	15

Sample ID: 132938-A-6, [6] SS11-006

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	6.9	5
Cobalt	mg/kg	<1	1
Copper	mg/kg	2.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.008	0.004
Nickel	mg/kg	6.5	2
Zinc	mg/kg	9.7	5

Sample ID: 132938-A-7, [7] SS11-007

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	171	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	171	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	6.6	5
Cobalt	mg/kg	1.1	1
Copper	mg/kg	8.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.007	0.004
Nickel	mg/kg	10.7	2
Zinc	mg/kg	7.7	5

Sample ID: 132938-A-8, [8] SS11-008

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-A-8, [8] SS11-008

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	43	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	43	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	15.0	5
Cobalt	mg/kg	1.5	1
Copper	mg/kg	3.2	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	11.1	2
Zinc	mg/kg	10.1	5

Sample ID: 132938-A-9, [9] SS11-010

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	282	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	282	15

Sample ID: 132938-A-9, [9] SS11-010

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	10.6	5
Cobalt	mg/kg	1.1	1
Copper	mg/kg	2.8	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.005	0.004
Nickel	mg/kg	8.5	2
Zinc	mg/kg	11.4	5

Sample ID: 132938-A-10, [10] SS11-011

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	103	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	103	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	8.2	5
Cobalt	mg/kg	1.2	1
Copper	mg/kg	2.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	7.7	2
Zinc	mg/kg	10.9	5

Sample ID: 132938-A-11, [11] SS11-012

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-A-11, [11] SS11-012

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	205	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	205	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	31.6	5
Cobalt	mg/kg	1.8	1
Copper	mg/kg	5.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.006	0.004
Nickel	mg/kg	19.0	2
Zinc	mg/kg	10.3	5

Sample ID: 132938-A-12, [12] SS11-013

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	145	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	145	15

Sample ID: 132938-A-12, [12] SS11-013

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	2.0	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	18.9	5
Cobalt	mg/kg	2.0	1
Copper	mg/kg	3.3	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.006	0.004
Nickel	mg/kg	13.1	2
Zinc	mg/kg	9.7	5

Comments:

Test Methodologies*:

Mercury (soil): Based on EPA 3050B & 7471B by Cold Vapour Atomic Fluorescence

Metals (soil): Based on EPA 3050B & 6010B/6020A

PCB (soil): Based on EPA SW-846 3550 & 8270

Total Extracables (soil): Based on EPA SW-846 8015C & CCME PHC Method 2001

Total Petroleum Hydrocarbons (soil): Based on CCME PHC Method, 2001

Total Purgeables (soil): Based on CCME PHC Method, 2001

QA/QC Reviewed By:



Lab Manager:

A. Salcedo

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

*Detailed test methodologies and QA/QC data available upon request.

ANALYTICAL DATA REPORT

Client Company: IEG Consultants c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132938-B

Client Contact: Jeff Whitter

Date Reported: Sep 07 2011

Client Project #: A07001A02

Sample ID: 132938-B-1, [13] SS11-015

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	19	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	19	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.2	0.1
Chromium	mg/kg	31.8	5
Cobalt	mg/kg	3.2	1
Copper	mg/kg	10.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	20.0	2
Zinc	mg/kg	22.6	5

Sample ID: 132938-B-2, [14] SS11-017

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05

Sample ID: 132938-B-2, [14] SS11-017

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	16	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	16	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	25.4	5
Cobalt	mg/kg	3.0	1
Copper	mg/kg	8.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	16.9	2
Zinc	mg/kg	14.1	5

Sample ID: 132938-B-3, [15] SS11-018

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	66	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	66	15

Sample ID: 132938-B-3, [15] SS11-018

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.2	0.1
Chromium	mg/kg	53.3	5
Cobalt	mg/kg	2.9	1
Copper	mg/kg	11.3	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.006	0.004
Nickel	mg/kg	30.1	2
Zinc	mg/kg	15.0	5

Sample ID: 132938-B-4, [16] SS11-019

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	41	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	41	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	22.6	5
Cobalt	mg/kg	2.8	1
Copper	mg/kg	9.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.005	0.004
Nickel	mg/kg	16.0	2
Zinc	mg/kg	17.3	5

Sample ID: 132938-B-5, [17] SS11-020

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-B-5, [17] SS11-020

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	1612	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	1612	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.5	0.1
Chromium	mg/kg	55.8	5
Cobalt	mg/kg	1.9	1
Copper	mg/kg	8.2	2
Lead	mg/kg	6.1	5
Mercury	mg/kg	0.044	0.004
Nickel	mg/kg	29.7	2
Zinc	mg/kg	34.0	5

Sample ID: 132938-B-6, [18] SS11-021

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	131	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	131	15

Sample ID: 132938-B-6, [18] SS11-021

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	2.3	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	68.0	5
Cobalt	mg/kg	2.0	1
Copper	mg/kg	5.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.009	0.004
Nickel	mg/kg	37.6	2
Zinc	mg/kg	8.3	5

Sample ID: 132938-B-7, [19] SS11-022

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	34	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	34	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	21.7	5
Cobalt	mg/kg	2.6	1
Copper	mg/kg	6.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	13.8	2
Zinc	mg/kg	13.8	5

Sample ID: 132938-B-8, [20] SS11-024

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-B-8, [20] SS11-024

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	40	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	40	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	43.4	5
Cobalt	mg/kg	3.3	1
Copper	mg/kg	6.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	23.8	2
Zinc	mg/kg	14.1	5

Sample ID: 132938-B-9, [21] SS11-025

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	23	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	23	15

Sample ID: 132938-B-9, [21] SS11-025

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	18.5	5
Cobalt	mg/kg	3.4	1
Copper	mg/kg	10.4	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	13.4	2
Zinc	mg/kg	17.5	5

Sample ID: 132938-B-10, [22] SS11-026

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	25	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	25	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	87.9	5
Cobalt	mg/kg	3.7	1
Copper	mg/kg	12.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	44.9	2
Zinc	mg/kg	20.3	5

Sample ID: 132938-B-11, [23] SS11-027

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-B-11, [23] SS11-027

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	15	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	15	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	<5	5
Cobalt	mg/kg	1.7	1
Copper	mg/kg	5.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	4.2	2
Zinc	mg/kg	12.5	5

Sample ID: 132938-B-12, [24] SS11-029

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	<10	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	<15	15

Sample ID: 132938-B-12, [24] SS11-029

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	<5	5
Cobalt	mg/kg	2.0	1
Copper	mg/kg	4.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	4.3	2
Zinc	mg/kg	12.3	5

Comments:

Test Methodologies*:

Mercury (soil): Based on EPA 3050B & 7471B by Cold Vapour Atomic Fluorescence

Metals (soil): Based on EPA 3050B & 6010B/6020A

PCB (soil): Based on EPA SW-846 3550 & 8270

Total Extracables (soil): Based on EPA SW-846 8015C & CCME PHC Method 2001

Total Petroleum Hydrocarbons (soil): Based on CCME PHC Method, 2001

Total Purgeables (soil): Based on CCME PHC Method, 2001

QA/QC Reviewed By:



Lab Manager:

A. Salcedo

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

*Detailed test methodologies and QA/QC data available upon request.

ANALYTICAL DATA REPORT

Client Company: IEG Consultants c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132938-C

Client Contact: Jeff Whitter

Date Reported: Sep 07 2011

Client Project #: A07001A02

Sample ID: 132938-C-1, [25] S11-031

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	43	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	43	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	16.9	5
Cobalt	mg/kg	3.6	1
Copper	mg/kg	7.8	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.005	0.004
Nickel	mg/kg	12.0	2
Zinc	mg/kg	15.3	5

Sample ID: 132938-C-2, [26] S11-032

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05

Sample ID: 132938-C-2, [26] S11-032

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	30	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	30	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	18.6	5
Cobalt	mg/kg	2.3	1
Copper	mg/kg	6.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	11.3	2
Zinc	mg/kg	14.0	5

Sample ID: 132938-C-3, [27] S11-033

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	714	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	714	15

Sample ID: 132938-C-3, [27] S11-033

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	12.8	5
Cobalt	mg/kg	1.2	1
Copper	mg/kg	5.6	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.021	0.004
Nickel	mg/kg	9.0	2
Zinc	mg/kg	17.6	5

Sample ID: 132938-C-4, [28] S11-035

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	121	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	121	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	74.3	5
Cobalt	mg/kg	2.7	1
Copper	mg/kg	7.2	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.006	0.004
Nickel	mg/kg	37.1	2
Zinc	mg/kg	13.8	5

Sample ID: 132938-C-5, [29] S11-036

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-C-5, [29] S11-036

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	129	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	129	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	83.4	5
Cobalt	mg/kg	3.2	1
Copper	mg/kg	8.2	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	40.7	2
Zinc	mg/kg	12.9	5

Sample ID: 132938-C-6, [30] S11-037

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	229	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	229	15

Sample ID: 132938-C-6, [30] S11-037

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	<5	5
Cobalt	mg/kg	<1	1
Copper	mg/kg	5.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.007	0.004
Nickel	mg/kg	2.9	2
Zinc	mg/kg	13.7	5

Sample ID: 132938-C-7, [31] S11-038

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	50	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	50	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	41.0	5
Cobalt	mg/kg	1.4	1
Copper	mg/kg	5.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.006	0.004
Nickel	mg/kg	20.8	2
Zinc	mg/kg	12.1	5

Sample ID: 132938-C-8, [32] S11-039

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-C-8, [32] S11-039

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	57	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	57	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	65.2	5
Cobalt	mg/kg	3.4	1
Copper	mg/kg	8.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.005	0.004
Nickel	mg/kg	33.9	2
Zinc	mg/kg	16.3	5

Sample ID: 132938-C-9, [33] S11-041

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	127	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	127	15

Sample ID: 132938-C-9, [33] S11-041

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.2	0.1
Chromium	mg/kg	48.2	5
Cobalt	mg/kg	3.4	1
Copper	mg/kg	14.6	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.010	0.004
Nickel	mg/kg	26.3	2
Zinc	mg/kg	19.3	5

Sample ID: 132938-C-10, [34] S11-042

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	47	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	47	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	20.7	5
Cobalt	mg/kg	3.2	1
Copper	mg/kg	9.3	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	14.5	2
Zinc	mg/kg	15.6	5

Sample ID: 132938-C-11, [35] S11-044

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-C-11, [35] S11-044

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	53	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	53	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	31.7	5
Cobalt	mg/kg	3.3	1
Copper	mg/kg	8.8	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	19.6	2
Zinc	mg/kg	13.8	5

Sample ID: 132938-C-12, [36] S11-045

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	27	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	27	15

Sample ID: 132938-C-12, [36] S11-045

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	10.5	5
Cobalt	mg/kg	2.3	1
Copper	mg/kg	9.2	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	7.3	2
Zinc	mg/kg	13.1	5

Comments:

Test Methodologies*:

Mercury (soil): Based on EPA 3050B & 7471B by Cold Vapour Atomic Fluorescence

Metals (soil): Based on EPA 3050B & 6010B/6020A

PCB (soil): Based on EPA SW-846 3550 & 8270

Total Extracables (soil): Based on EPA SW-846 8015C & CCME PHC Method 2001

Total Petroleum Hydrocarbons (soil): Based on CCME PHC Method, 2001

Total Purgeables (soil): Based on CCME PHC Method, 2001

QA/QC Reviewed By:



Lab Manager:

A. Salcedo

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

*Detailed test methodologies and QA/QC data available upon request.

ANALYTICAL DATA REPORT

Client Company: IEG Consultants c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132938-D

Client Contact: Jeff Whitter

Date Reported: Sep 07 2011

Client Project #: A07001A02

Sample ID: 132938-D-1, [37] S11-047

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	17	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	17	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	15.1	5
Cobalt	mg/kg	2.8	1
Copper	mg/kg	10.6	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	10.6	2
Zinc	mg/kg	13.5	5

Sample ID: 132938-D-2, [38] S11-048

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05

Sample ID: 132938-D-2, [38] S11-048

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	99	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	99	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	22.9	5
Cobalt	mg/kg	3.7	1
Copper	mg/kg	7.6	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	12.1	2
Zinc	mg/kg	46.9	5

Sample ID: 132938-D-3, [39] S11-049

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	20	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	20	15

Sample ID: 132938-D-3, [39] S11-049

Date Sampled: Aug 24, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	<5	5
Cobalt	mg/kg	1.0	1
Copper	mg/kg	2.3	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	2.3	2
Zinc	mg/kg	6.6	5

Sample ID: 132938-D-4, [40] S11-050

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	74	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	74	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	16.2	5
Cobalt	mg/kg	2.4	1
Copper	mg/kg	5.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	10.8	2
Zinc	mg/kg	10.1	5

Sample ID: 132938-D-5, [41] S11-051

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-D-5, [41] S11-051

Date Sampled: Aug 24, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	26	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	26	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	6.3	5
Cobalt	mg/kg	1.9	1
Copper	mg/kg	4.9	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	5.6	2
Zinc	mg/kg	9.5	5

Sample ID: 132938-D-6, [42] S11-052

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	43	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	43	15

Sample ID: 132938-D-6, [42] S11-052

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	2.2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	40.1	5
Cobalt	mg/kg	4.6	1
Copper	mg/kg	20.8	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	22.9	2
Zinc	mg/kg	18.5	5

Sample ID: 132938-D-7, [43] S11-053

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	27	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	27	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	2.9	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	50.7	5
Cobalt	mg/kg	4.4	1
Copper	mg/kg	11.4	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	26.9	2
Zinc	mg/kg	17.1	5

Sample ID: 132938-D-8, [44] S11-054

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-D-8, [44] S11-054

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	15	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	15	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	<5	5
Cobalt	mg/kg	1.1	1
Copper	mg/kg	2.6	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	3.2	2
Zinc	mg/kg	8.7	5

Sample ID: 132938-D-9, [45] S11-056

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	18	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	18	15

Sample ID: 132938-D-9, [45] S11-056

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	27.2	5
Cobalt	mg/kg	2.4	1
Copper	mg/kg	10.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	14.9	2
Zinc	mg/kg	15.9	5

Sample ID: 132938-D-10, [46] S11-057

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	2293	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	2293	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	25.0	5
Cobalt	mg/kg	3.3	1
Copper	mg/kg	16.0	2
Lead	mg/kg	14.3	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	15.0	2
Zinc	mg/kg	22.1	5

Sample ID: 132938-D-11, [47] S11-058

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-D-11, [47] S11-058

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	4828	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	4828	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	20.4	5
Cobalt	mg/kg	3.0	1
Copper	mg/kg	18.8	2
Lead	mg/kg	6.2	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	12.5	2
Zinc	mg/kg	16.6	5

Sample ID: 132938-D-12, [48] S11-059

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	777	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	777	15

Sample ID: 132938-D-12, [48] S11-059

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	21.9	5
Cobalt	mg/kg	3.1	1
Copper	mg/kg	15.3	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.007	0.004
Nickel	mg/kg	14.0	2
Zinc	mg/kg	19.8	5

Comments:

Test Methodologies*:

Mercury (soil): Based on EPA 3050B & 7471B by Cold Vapour Atomic Fluorescence

Metals (soil): Based on EPA 3050B & 6010B/6020A

PCB (soil): Based on EPA SW-846 3550 & 8270

Total Extracables (soil): Based on EPA SW-846 8015C & CCME PHC Method 2001

Total Petroleum Hydrocarbons (soil): Based on CCME PHC Method, 2001

Total Purgeables (soil): Based on CCME PHC Method, 2001

QA/QC Reviewed By:



Lab Manager:

A. Salcedo

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

*Detailed test methodologies and QA/QC data available upon request.

ANALYTICAL DATA REPORT

Client Company: IEG Consultants c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132938-E

Client Contact: Jeff Whitter

Date Reported: Sep 07 2011

Client Project #: A07001A02

Sample ID: 132938-E-1, [49] S11-060

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	37	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	37	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	15.1	5
Cobalt	mg/kg	1.4	1
Copper	mg/kg	9.4	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	8.5	2
Zinc	mg/kg	9.4	5

Sample ID: 132938-E-2, [50] S11-062

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05

Sample ID: 132938-E-2, [50] S11-062

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	<10	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	<15	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	20.2	5
Cobalt	mg/kg	2.5	1
Copper	mg/kg	6.8	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	12.1	2
Zinc	mg/kg	12.1	5

Sample ID: 132938-E-3, [51] S11-063

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	21	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	21	15

Sample ID: 132938-E-3, [51] S11-063

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	61.9	5
Cobalt	mg/kg	2.9	1
Copper	mg/kg	8.7	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	30.6	2
Zinc	mg/kg	12.4	5

Sample ID: 132938-E-4, [52] S11-064

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	36	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	36	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	11.3	5
Cobalt	mg/kg	1.7	1
Copper	mg/kg	5.7	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	7.1	2
Zinc	mg/kg	12.2	5

Sample ID: 132938-E-5, [53] S11-066

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-E-5, [53] S11-066

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	30	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	30	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	18.6	5
Cobalt	mg/kg	1.9	1
Copper	mg/kg	7.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	10.4	2
Zinc	mg/kg	11.9	5

Sample ID: 132938-E-6, [54] S11-067

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	1823	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	1823	15

Sample ID: 132938-E-6, [54] S11-067

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	2.8	2
Cadmium	mg/kg	0.9	0.1
Chromium	mg/kg	28.0	5
Cobalt	mg/kg	1.8	1
Copper	mg/kg	11.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.006	0.004
Nickel	mg/kg	16.3	2
Zinc	mg/kg	20.2	5

Sample ID: 132938-E-7, [55] S11-068

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	2840	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	2840	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	4.7	2
Cadmium	mg/kg	1.4	0.1
Chromium	mg/kg	28.9	5
Cobalt	mg/kg	2.2	1
Copper	mg/kg	18.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	18.3	2
Zinc	mg/kg	21.7	5

Sample ID: 132938-E-8, [56] S11-069

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-E-8, [56] S11-069

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	61	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	61	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	2.2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	22.1	5
Cobalt	mg/kg	2.6	1
Copper	mg/kg	17.5	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	13.3	2
Zinc	mg/kg	15.3	5

Sample ID: 132938-E-9, [57] S11-070

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	47	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	47	15

Sample ID: 132938-E-9, [57] S11-070

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	0.1	0.1
Chromium	mg/kg	26.0	5
Cobalt	mg/kg	2.8	1
Copper	mg/kg	9.7	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	15.2	2
Zinc	mg/kg	16.6	5

Sample ID: 132938-E-10, [58] S11-071

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	<10	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	<15	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	13.8	5
Cobalt	mg/kg	2.1	1
Copper	mg/kg	5.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	8.4	2
Zinc	mg/kg	8.8	5

Sample ID: 132938-E-11, [59] S11-072

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-E-11, [59] S11-072

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	29	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	29	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	18.6	5
Cobalt	mg/kg	2.0	1
Copper	mg/kg	6.1	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	10.7	2
Zinc	mg/kg	8.6	5

Sample ID: 132938-E-12, [60] S11-073

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	33	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	33	15

Sample ID: 132938-E-12, [60] S11-073

Date Sampled: Aug 25, 2011

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	6.4	5
Cobalt	mg/kg	1.6	1
Copper	mg/kg	4.3	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	4.9	2
Zinc	mg/kg	8.6	5

Sample ID: 132938-E-13, [61] S11-074

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	12	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	<15	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	<5	5
Cobalt	mg/kg	1.3	1
Copper	mg/kg	3.7	2
Lead	mg/kg	<5	5
Mercury	mg/kg	<0.004	0.004
Nickel	mg/kg	3.4	2
Zinc	mg/kg	7.6	5

Sample ID: 132938-E-14, [62] S11-034

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1016	mg/kg	<0.05	0.05
Aroclor 1221	mg/kg	<0.05	0.05
Aroclor 1232	mg/kg	<0.05	0.05

Sample ID: 132938-E-14, [62] S11-034

Date Sampled: Aug 25, 2011

Package Name: Polychlorinated Biphenyls (PCBs) in soil

Parameter Name	Units	Results	Detection Limit
Aroclor 1242	mg/kg	<0.05	0.05
Aroclor 1248	mg/kg	<0.05	0.05
Aroclor 1254	mg/kg	<0.05	0.05
Aroclor 1260	mg/kg	<0.05	0.05
Aroclor 1262	mg/kg	<0.05	0.05
Aroclor 1268	mg/kg	<0.05	0.05
Total PCBs	mg/kg	<0.45	0.45

Package Name: Total Petroleum Hydrocarbons in soil (C6-C50)

Parameter Name	Units	Results	Detection Limit
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	5
Total Extractable Hydrocarbons (C10-C50)	mg/kg (dry weight)	28	10
Total Petroleum Hydrocarbons (C6-C50)	mg/kg	28	15

Package Name: DCC Metals in Soil

Parameter Name	Units	Results	Detection Limit
Arsenic	mg/kg	<2	2
Cadmium	mg/kg	<0.1	0.1
Chromium	mg/kg	16.3	5
Cobalt	mg/kg	1.5	1
Copper	mg/kg	3.0	2
Lead	mg/kg	<5	5
Mercury	mg/kg	0.004	0.004
Nickel	mg/kg	9.4	2
Zinc	mg/kg	10.0	5

Comments:

Test Methodologies*:

Mercury (soil): Based on EPA 3050B & 7471B by Cold Vapour Atomic Fluorescence

Metals (soil): Based on EPA 3050B & 6010B/6020A

PCB (soil): Based on EPA SW-846 3550 & 8270

Total Extracables (soil): Based on EPA SW-846 8015C & CCME PHC Method 2001

Total Petroleum Hydrocarbons (soil): Based on CCME PHC Method, 2001

Total Purgeables (soil): Based on CCME PHC Method, 2001

QA/QC Reviewed By: 

Lab Manager: A. Salcedo

Note: The results in this report relate only to the items tested. Information is available for any items in 5.10.2 of ISO/IEC 17025 that cannot be put on a test report.

*Detailed test methodologies and QA/QC data available upon request.

QUALITY CONTROL REPORT

Client Company: IEG Consultants c/o KCBL

Date Received: Aug 30 2011

Lab File #: 132938

Client Contact: Jeff Whitter

Date Reported: Sep 07 2011

Client Project #: A07001A02

Parameter Name	Units	Method Blank	Calibration Verification Standard		Laboratory Control Sample		Duplicate or Matrix Spike Duplicate	
			% Recovery		% Recovery		% Rel. Dif.	
Aroclor 1232	mg/kg	<0.05	86	Pass	82	Pass	5	Pass
Aroclor 1248	mg/kg	<0.05	97	Pass	87	Pass	3	Pass
Aroclor 1260	mg/kg	<0.05	96	Pass	90	Pass	5	Pass
Total PCBs	mg/kg	<0.45	93	Pass	86	Pass	1	Pass
Total Purgeable Hydrocarbons (C6-C10)	mg/kg	<5	110	Pass	97	Pass	11	Pass
Total Extractable Hydrocarbons (C10-C50)	mg/kg	<10	102	Pass	106	Pass	2	Pass
Arsenic	mg/kg	<2	104	Pass	111	Pass	1	Pass
Cadmium	mg/kg	<0.1	97	Pass	102	Pass	5	Pass
Chromium	mg/kg	<5	98	Pass	117	Pass	8	Pass
Cobalt	mg/kg	<1	99	Pass	111	Pass	0	Pass
Copper	mg/kg	<2	100	Pass	101	Pass	4	Pass
Lead	mg/kg	<5	98	Pass	108	Pass	1	Pass
Mercury	mg/kg	<0.004	99	Pass	94	Pass	0	Pass
Nickel	mg/kg	<2	97	Pass	113	Pass	5	Pass
Zinc	mg/kg	<5	96	Pass	112	Pass	1	Pass

QA/QC Reviewed By: _____



Lab Manager: _____

A. Salcedo

N/A-DL = Not Applicable - result is less than the detection limit or less than ten times the detection limit

*Detailed test methodologies available upon request

Your Project #: A07001A02
 Site Location: LADY FRANKLIN
 Your C.O.C. #: A034058

Attention: JEFF WHITTER
 IEG CONSULTANTS LTD.
 500-2618 HOPEWELL PLACE NE
 CALGARY, AB
 CANADA T1Y 7J7

Report Date: 2011/09/07

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B181454

Received: 2011/08/30, 8:00

Sample Matrix: Soil
 # Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 by HS GC/MS (MeOH extract)	6	2011/08/31	2011/09/02	CAL SOP-00190	CCME CWS, EPA 8260C
CCME Hydrocarbons (F2-F4 in soil)	6	2011/08/31	2011/09/02	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	6	2011/09/02	2011/09/02	AB SOP-00043	EPA 200.8
Polychlorinated Biphenyls	6	2011/08/31	2011/09/02	CAL SOP-00149	EPA 3550B, EPA 8082A

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

Encryption Key



Parminder Virk

07 Sep 2011 16:58:51 -06:00

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

Parminder Virk, Project Manager
 Email: PVirk@maxxam.ca
 Phone# (403) 291-3077

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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: 1

Maxxam Job #: B181454
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: A07001A02
Site Location: LADY FRANKLIN
Sampler Initials: RL

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BK2119	BK2284	BK2285	BK2286	BK2287		
Sampling Date		2011/08/24	2011/08/24	2011/08/24	2011/08/24	2011/08/24		
COC Number		A034058	A034058	A034058	A034058	A034058		
	Units	SS11-009	SS11-014	SS11-016	SS11-023	SS11-028	RDL	QC Batch

Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	5142377
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	5142377
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	5142377
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5142377
Volatiles								
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	12	5145348
LH (C5-C10)	mg/kg	<12	<12	<12	<12	<12	12	5145348
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	124	123	103	122	126	N/A	5145348
4-BROMOFLUOROBENZENE (sur.)	%	97	98	82	100	100	N/A	5145348
D10-ETHYLBENZENE (sur.)	%	109	119	109	118	121	N/A	5145348
D4-1,2-DICHLOROETHANE (sur.)	%	107	111	90	106	109	N/A	5145348
O-TERPHENYL (sur.)	%	88	89	88	93	93	N/A	5142377
N/A = Not Applicable RDL = Reportable Detection Limit								

Maxxam Job #: B181454
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: A07001A02
Site Location: LADY FRANKLIN
Sampler Initials: RL

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BK2288		
Sampling Date		2011/08/24		
COC Number		A034058		
	Units	SS11-030	RDL	QC Batch

Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	10	5142377
F3 (C16-C34 Hydrocarbons)	mg/kg	<10	10	5142377
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	10	5142377
Reached Baseline at C50	mg/kg	Yes	N/A	5142377
Volatiles				
F1 (C6-C10) - BTEX	mg/kg	<12	12	5145348
LH (C5-C10)	mg/kg	<12	12	5145348
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	124	N/A	5145348
4-BROMOFLUOROBENZENE (sur.)	%	106	N/A	5145348
D10-ETHYLBENZENE (sur.)	%	120	N/A	5145348
D4-1,2-DICHLOROETHANE (sur.)	%	115	N/A	5145348
O-TERPHENYL (sur.)	%	92	N/A	5142377
N/A = Not Applicable RDL = Reportable Detection Limit				

Maxxam Job #: B181454
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: A07001A02
Site Location: LADY FRANKLIN
Sampler Initials: RL

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		BK2119	BK2119	BK2284	BK2285	BK2286		
Sampling Date		2011/08/24	2011/08/24	2011/08/24	2011/08/24	2011/08/24		
COC Number		A034058	A034058	A034058	A034058	A034058		
	Units	SS11-009	SS11-009 Lab-Dup	SS11-014	SS11-016	SS11-023	RDL	QC Batch

Polychlorinated Biphenyls								
Total Aroclors	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5146275
Surrogate Recovery (%)								
NONACHLOROBIPHENYL (sur.)	%	61	111	92	95	115	N/A	5146275

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam ID		BK2287	BK2288		
Sampling Date		2011/08/24	2011/08/24		
COC Number		A034058	A034058		
	Units	SS11-028	SS11-030	RDL	QC Batch

Polychlorinated Biphenyls					
Total Aroclors	mg/kg	<0.010	<0.010	0.010	5146275
Surrogate Recovery (%)					
NONACHLOROBIPHENYL (sur.)	%	98	99	N/A	5146275

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B181454
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: A07001A02
Site Location: LADY FRANKLIN
Sampler Initials: RL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		BK2119	BK2284	BK2285	BK2286	BK2287	BK2288		
Sampling Date		2011/08/24	2011/08/24	2011/08/24	2011/08/24	2011/08/24	2011/08/24		
COC Number		A034058	A034058	A034058	A034058	A034058	A034058		
	Units	SS11-009	SS11-014	SS11-016	SS11-023	SS11-028	SS11-030	RDL	QC Batch

Elements									
Total Arsenic (As)	mg/kg	<1	1	<1	<1	<1	<1	1	5147382
Total Cadmium (Cd)	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	5147382
Total Chromium (Cr)	mg/kg	5	4	6	6	3	4	1	5147382
Total Cobalt (Co)	mg/kg	2	2	3	2	1	2	1	5147382
Total Copper (Cu)	mg/kg	<5	<5	8	6	<5	<5	5	5147382
Total Lead (Pb)	mg/kg	2	3	2	1	<1	<1	1	5147382
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	5147382
Total Nickel (Ni)	mg/kg	4	5	10	6	3	3	1	5147382
Total Zinc (Zn)	mg/kg	<10	<10	<10	<10	<10	<10	10	5147382

RDL = Reportable Detection Limit

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Package 1	12.7°C

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

General Comments

Results relate only to the items tested.

IEG CONSULTANTS LTD.
Attention: JEFF WHITTER
Client Project #: A07001A02
P.O. #:
Site Location: LADY FRANKLIN

Quality Assurance Report
Maxxam Job Number: CB181454

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5142377 SDD	Matrix Spike	O-TERPHENYL (sur.)	2011/09/02		89	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2011/09/02		110	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2011/09/02		89	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2011/09/02		96	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2011/09/02		88	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2011/09/02		111	%	70 - 130
		F3 (C16-C34 Hydrocarbons)	2011/09/02		102	%	70 - 130
		F4 (C34-C50 Hydrocarbons)	2011/09/02		110	%	70 - 130
	Method Blank	O-TERPHENYL (sur.)	2011/09/01		69	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2011/09/01	<10		mg/kg	
		F3 (C16-C34 Hydrocarbons)	2011/09/01	<10		mg/kg	
		F4 (C34-C50 Hydrocarbons)	2011/09/01	<10		mg/kg	
	RPD	F2 (C10-C16 Hydrocarbons)	2011/09/02	NC		%	50
		F3 (C16-C34 Hydrocarbons)	2011/09/02	NC		%	50
		F4 (C34-C50 Hydrocarbons)	2011/09/02	NC		%	50
5145348 PX	Matrix Spike	1,4-Difluorobenzene (sur.)	2011/09/02		117	%	60 - 140
		4-BROMOFLUOROBENZENE (sur.)	2011/09/02		113	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2011/09/02		104	%	60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2011/09/02		79	%	60 - 140
	Spiked Blank	1,4-Difluorobenzene (sur.)	2011/09/02		111	%	60 - 140
		4-BROMOFLUOROBENZENE (sur.)	2011/09/02		112	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2011/09/02		89	%	60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2011/09/02		83	%	60 - 140
	Method Blank	1,4-Difluorobenzene (sur.)	2011/09/03		120	%	60 - 140
		4-BROMOFLUOROBENZENE (sur.)	2011/09/03		102	%	60 - 140
		D10-ETHYLBENZENE (sur.)	2011/09/03		101	%	60 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2011/09/03		122	%	60 - 140
	RPD	F1 (C6-C10) - BTEX	2011/09/03	<12		mg/kg	
		F1 (C6-C10) - BTEX	2011/09/02	NC		%	50
5146275 JC7	Matrix Spike	NONACHLOROBIPHENYL (sur.)	2011/09/02		90	%	30 - 130
	[BK2119-01]	NONACHLOROBIPHENYL (sur.)	2011/09/02		99	%	30 - 130
	Spiked Blank	NONACHLOROBIPHENYL (sur.)	2011/09/02		92	%	30 - 130
	Method Blank	Total Aroclors	2011/09/02	<0.010		mg/kg	
	RPD [BK2119-01]	Total Aroclors	2011/09/02	NC		%	50
5147382 MB5	Matrix Spike	Total Arsenic (As)	2011/09/02		76	%	75 - 125
		Total Cadmium (Cd)	2011/09/02		84	%	75 - 125
		Total Chromium (Cr)	2011/09/02		84	%	75 - 125
		Total Cobalt (Co)	2011/09/02		86	%	75 - 125
		Total Copper (Cu)	2011/09/02		82	%	75 - 125
		Total Lead (Pb)	2011/09/02		91	%	75 - 125
		Total Mercury (Hg)	2011/09/02		85	%	75 - 125
		Total Nickel (Ni)	2011/09/02		NC	%	75 - 125
		Total Zinc (Zn)	2011/09/02		NC	%	75 - 125
	QC Standard	Total Arsenic (As)	2011/09/02		94	%	50 - 150
		Total Chromium (Cr)	2011/09/02		98	%	41 - 159
		Total Cobalt (Co)	2011/09/02		98	%	75 - 125
		Total Copper (Cu)	2011/09/02		90	%	72 - 127
		Total Lead (Pb)	2011/09/02		101	%	54 - 146
		Total Nickel (Ni)	2011/09/02		104	%	61 - 139
	Spiked Blank	Total Zinc (Zn)	2011/09/02		99	%	72 - 128
		Total Arsenic (As)	2011/09/02		88	%	75 - 125
		Total Cadmium (Cd)	2011/09/02		94	%	75 - 125
		Total Chromium (Cr)	2011/09/02		96	%	75 - 125
		Total Cobalt (Co)	2011/09/02		98	%	75 - 125

IEG CONSULTANTS LTD.
Attention: JEFF WHITTER
Client Project #: A07001A02
P.O. #:
Site Location: LADY FRANKLIN

Quality Assurance Report (Continued)

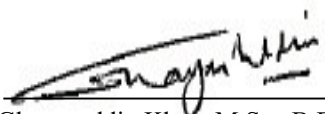
Maxxam Job Number: CB181454

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5147382 MB5	Spiked Blank	Total Copper (Cu)	2011/09/02		95	%	75 - 125
		Total Lead (Pb)	2011/09/02		100	%	75 - 125
		Total Mercury (Hg)	2011/09/02		95	%	75 - 125
		Total Nickel (Ni)	2011/09/02		96	%	75 - 125
		Total Zinc (Zn)	2011/09/02		96	%	75 - 125
	Method Blank	Total Arsenic (As)	2011/09/02	<1		mg/kg	
		Total Cadmium (Cd)	2011/09/02	<0.1		mg/kg	
		Total Chromium (Cr)	2011/09/02	<1		mg/kg	
		Total Cobalt (Co)	2011/09/02	<1		mg/kg	
		Total Copper (Cu)	2011/09/02	<5		mg/kg	
	RPD	Total Lead (Pb)	2011/09/02	<1		mg/kg	
		Total Mercury (Hg)	2011/09/02	<0.05		mg/kg	
		Total Nickel (Ni)	2011/09/02	<1		mg/kg	
		Total Zinc (Zn)	2011/09/02	<10		mg/kg	
		Total Arsenic (As)	2011/09/02	14.9		%	35
		Total Cadmium (Cd)	2011/09/02	6.7		%	35
		Total Chromium (Cr)	2011/09/02	2.0		%	35
		Total Cobalt (Co)	2011/09/02	12.5		%	35
		Total Copper (Cu)	2011/09/02	NC		%	35
		Total Lead (Pb)	2011/09/02	13.8		%	35
		Total Mercury (Hg)	2011/09/02	NC		%	35
		Total Nickel (Ni)	2011/09/02	3.6		%	35
		Total Zinc (Zn)	2011/09/02	1.3		%	35

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

Validation Signature Page**Maxxam Job #: B181454**

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



Ghayasuddin Khan, M.Sc., B.Ed., P.Chem, Senior Analyst, Water Lab



Janet Gao, Senior Analyst, Organics Department

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.

Company:	Invoice To:	C/O Report Address
IEG Consultants	IEG Consultants	
Contact:	Jeff Whittier	
Address:		
Contact #s:	Prov:	PC:
	Ph:	Cell:

Report To:	Same as Invoice
IEG Consultants	
500 - 2618 Hopedale Pl NE	
Calgary	
Prov: AB	PC: TIV 737
Ph: 867 777-8521	Cell: 867 678-4444

Report Distribution (E-Mail):
Flennie @ klobn.com
JWhittier @ klobn.com

REGULATORY GUIDELINES:
☐ AT1
☒ CCME
☐ Regulated Drinking Water
☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:
Project # / Name: A07001 A02
Site Location: Lady Franklin
Quote #:
Sampled By: RL

SERVICE REQUESTED:	☐ RUSH (Contact lab to reserve)
	Date Required: _____
	☒ REGULAR (5 to 7 Days)

PO #:	Project # / Name: NO 7001 A07	Site Location: Lady F. D. Kline	Quote #:	Sampled By: RL	SERVICE REQUESTED: ☐ RUSH (Contact lab to reserve) ☒ REGULAR (5 to 7 Days)	Date Required: ☐ ☒	See reverse for package specifics	BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	PCB - Total Aroclor	TPH - F1-F3	Asbestos (Lab only)	CO2 (Lab only)	BTEX F1	BTEX F1-F2	BTEX F1-F4	TOC	DOC	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Dissolved	Mercury	Total	Regulated Metals (CCME / AT1)	Diss

Please indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print):	Date (YYMMDD):	Time (24:00):
Ryan Lemie	4/08/27	11:00
Relinquished By (Signature/Print):	Date (YYMMDD):	Time (24:00):
Special Instructions:	# of Jars Used & Not Submitted	

Received By:	Date:	Time:	Maxxam Job #:
	2011/08/30	8:00	3181454
Lab Comments:	taped 11.13.14		
	Custody Seal	Temperature	Ice

Parminder Virk

B181454 & B 181052

From: Whitter, Jeff [JWhitter@klohn.com]
Sent: Thursday, September 01, 2011 2:49 PM
To: Parminder Virk; Beavis, Krista
Subject: RE: PIN 3 - Total Metals B181052

Parminder,

Yes your interpretation of the required analysis is correct.

The direction to use the unpreserved water sample is also correct for the total metals analysis. As for the method used for you to report total metals I cannot comment as I do not know how to perform the analysis. I expect that to be your expertise.

Thanks
Jeff

From: Parminder Virk [mailto:PVirk@maxxam.ca]
Sent: Thursday, September 01, 2011 2:40 PM
To: Whitter, Jeff; Beavis, Krista
Cc: Parminder Virk
Subject: RE: PIN 3 - Total Metals B181052

Hi Jeff and Krista,

As per our conversation today, we will be analysing the following parameters only:

- F1 (C6-C10)
- F2 (C10-C16)
- F3 (C16-C34)
- F4 (C34-C50)
- PCB including total aroclor
- Total Metals - only Arsenic, Cadmium, Chromium, Cobalt, Copper, Lead, Nickel, Zinc and Mercury

For Total metals analysis in water samples, we will be using unpreserved sample (as per your request) that will undergo strong acid digestion before loading onto the instruments. Please confirm by responding to this email.

Our standard procedures for total metals analysis are based on the following primary reference methods:

ICPOES

 Image removed by sender.

ICPMS

2011/09/01



Please let me know if you have any questions regarding this.

Thank you.

Parminder Virk
Environmental Project Manager

Office 403 219 3669

From: Whitter, Jeff [mailto:JWhitter@klohn.com]
Sent: Thursday, September 01, 2011 11:24 AM
To: Parminder Virk
Subject: PIN 3 - Total Metals B181052

Parminder,

I have reviewed the project terms of reference, and it states that we do not need to field preserve the samples and that the total metals analysis should be done on an un-preserved sample as per the correct analytical method.

Please use the unpreserved samples to complete the analysis.

Also can you confirm that the confirmation report will be sent to us for the soil samples?

Jeff

Jeff Whitter, P.Eng.
Hydrogeologist

Klohn Crippen Berger 500 - 2618 Hopewell Place NE, Calgary AB T1Y 7J7 CANADA
D: 403.730.8837 | T: 403.274.3424 | F: 403.274.5349 | jwhitter@klohn.com | www.klohn.com

If you have received this email in error, please delete the original message.

2011/09/01

Your P.O. #: A07001A02
Your Project #: PIN-3
Site Location: PIN-3
Your C.O.C. #: A034056

Attention: JEFF WHITTER
IEG CONSULTANTS LTD.
500-2618 HOPEWELL PLACE NE
CALGARY, AB
CANADA T1Y 7J7

Report Date: 2011/09/07

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B181052

Received: 2011/08/30, 8:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/F1 in Water by HS GC/MS	3	N/A	2011/09/03	CAL SOP-00190	CCME CWS, EPA 8260C
Cadmium - low level CCME (Total)	3	2011/08/30	2011/09/04	AB SOP-00043	EPA 200.8
CCME Hydrocarbons (F2-F4 in water)	1	2011/09/02	2011/09/02	CAL SOP-00086 AB SOP-00037	EPA3510C/CCME PHCCWS
CCME Hydrocarbons (F2-F4 in water)	2	2011/09/02	2011/09/03	CAL SOP-00086 AB SOP-00037	EPA3510C/CCME PHCCWS
Mercury - Low Level (Total)	3	2011/09/06	2011/09/06	CAL SOP-00007	EPA 1631
Elements by ICPMS - Total	3	2011/09/01	2011/09/02	AB SOP-00043	EPA 200.8
Polychlorinated Biphenyls	3	2011/08/31	2011/08/31	CAL SOP-00149	EPA 3510C, EPA 8082A

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

Encryption Key



Parminder Virk

07 Sep 2011 17:18:38 -06:00

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

Parminder Virk, Project Manager
Email: PVirk@maxxam.ca
Phone# (403) 291-3077

=====

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

Total cover pages: 1

Maxxam Job #: B181052
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: PIN-3
Site Location: PIN-3
Your P.O. #: A07001A02
Sampler Initials: CTP

AT1 F2-F4 (WATER)

Maxxam ID		BK0400	BK0405	BK0406		
Sampling Date		2011/08/24 15:13	2011/08/25 10:28	2011/08/25 19:17		
COC Number		A034056	A034056	A034056		
	Units	WS11-001	WS11-006	WS11-012	RDL	QC Batch

Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	0.1	5145089
F3 (C16-C34 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	0.1	5145089
F4 (C34-C50 Hydrocarbons)	mg/L	<0.1	<0.1	<0.1	0.1	5145089
Reached Baseline at C50	mg/L	Yes	Yes	Yes	N/A	5145089
Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	95	97	96	N/A	5145089

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B181052
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: PIN-3
Site Location: PIN-3
Your P.O. #: A07001A02
Sampler Initials: CTP

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		BK0400	BK0405	BK0406		
Sampling Date		2011/08/24 15:13	2011/08/25 10:28	2011/08/25 19:17		
COC Number		A034056	A034056	A034056		
	Units	WS11-001	WS11-006	WS11-012	RDL	QC Batch

Low Level Elements						
Total Cadmium (Cd)	ug/L	0.007	0.016	0.013	0.005	5135857
Elements						
Total Arsenic (As)	mg/L	0.0007	0.0007	0.0003	0.0002	5143901
Total Cadmium (Cd)	mg/L	0.000007	0.000016	0.000013	0.000005	5143901
Total Chromium (Cr)	mg/L	0.009	<0.001	0.001	0.001	5143901
Total Cobalt (Co)	mg/L	0.0007	0.0007	0.0005	0.0003	5143901
Total Copper (Cu)	mg/L	0.0024	0.0022	0.0018	0.0002	5143901
Total Lead (Pb)	mg/L	0.0002	0.0003	0.0003	0.0002	5143901
Total Nickel (Ni)	mg/L	0.014	0.0075	0.0049	0.0005	5143901
Total Zinc (Zn)	mg/L	0.015	<0.003	<0.003	0.003	5143901

RDL = Reportable Detection Limit

Maxxam Job #: B181052
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: PIN-3
Site Location: PIN-3
Your P.O. #: A07001A02
Sampler Initials: CTP

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		BK0400	BK0405	BK0406		
Sampling Date		2011/08/24 15:13	2011/08/25 10:28	2011/08/25 19:17		
COC Number		A034056	A034056	A034056		
	Units	WS11-001	WS11-006	WS11-012	RDL	QC Batch

Polychlorinated Biphenyls						
Aroclor 1016	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1221	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1232	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1242	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1248	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1254	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1260	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1262	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Aroclor 1268	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Total Aroclors	mg/L	<0.000050	<0.000050	<0.000050	0.000050	5137769
Surrogate Recovery (%)						
NONACHLOROBIPHENYL (sur.)	%	89	80	80	N/A	5137769

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B181052
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: PIN-3
Site Location: PIN-3
Your P.O. #: A07001A02
Sampler Initials: CTP

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		BK0400	BK0405	BK0406		
Sampling Date		2011/08/24 15:13	2011/08/25 10:28	2011/08/25 19:17		
COC Number		A034056	A034056	A034056		
	Units	WS11-001	WS11-006	WS11-012	RDL	QC Batch

Low Level Elements						
Total Mercury (Hg)	ug/L	<0.002	<0.002	<0.002	0.002	5150991

RDL = Reportable Detection Limit

Maxxam Job #: B181052
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: PIN-3
Site Location: PIN-3
Your P.O. #: A07001A02
Sampler Initials: CTP

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		BK0400	BK0400	BK0405	BK0406		
Sampling Date		2011/08/24 15:13	2011/08/24 15:13	2011/08/25 10:28	2011/08/25 19:17		
COC Number		A034056	A034056	A034056	A034056		
	Units	WS11-001	WS11-001 Lab-Dup	WS11-006	WS11-012	RDL	QC Batch

Volatiles							
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	100	5148748
LH (C5-C10)	ug/L	<100	<100	<100	<100	100	5148748
(C6-C10)	ug/L	<100	<100	<100	<100	100	5148748
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	105	108	105	104	N/A	5148748
4-BROMOFLUOROBENZENE (sur.)	%	91	91	92	93	N/A	5148748
D4-1,2-DICHLOROETHANE (sur.)	%	102	100	100	100	N/A	5148748

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B181052
Report Date: 2011/09/07

IEG CONSULTANTS LTD.
Client Project #: PIN-3
Site Location: PIN-3
Your P.O. #: A07001A02
Sampler Initials: CTP

Package 1	11.6°C
Package 2	10.7°C

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

General Comments

Total metals analysed out of unpreserved aliquot for all samples

Results relate only to the items tested.

IEG CONSULTANTS LTD.
Attention: JEFF WHITTER
Client Project #: PIN-3
P.O. #: A07001A02
Site Location: PIN-3

Quality Assurance Report
Maxxam Job Number: CB181052

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5137769 JC7	Spiked Blank	NONACHLOROBIPHENYL (sur.)	2011/08/31		105	%	30 - 130
		Aroclor 1260	2011/08/31		101	%	30 - 130
	Method Blank	NONACHLOROBIPHENYL (sur.)	2011/08/31		85	%	30 - 130
		Aroclor 1016	2011/08/31	<0.000050		mg/L	
		Aroclor 1221	2011/08/31	<0.000050		mg/L	
		Aroclor 1232	2011/08/31	<0.000050		mg/L	
		Aroclor 1242	2011/08/31	<0.000050		mg/L	
		Aroclor 1248	2011/08/31	<0.000050		mg/L	
		Aroclor 1254	2011/08/31	<0.000050		mg/L	
		Aroclor 1260	2011/08/31	<0.000050		mg/L	
		Aroclor 1262	2011/08/31	<0.000050		mg/L	
		Aroclor 1268	2011/08/31	<0.000050		mg/L	
		Total Aroclors	2011/08/31	<0.000050		mg/L	
5143901 ST4	Matrix Spike	Total Arsenic (As)	2011/09/02		95	%	80 - 120
		Total Cadmium (Cd)	2011/09/02		102	%	80 - 120
		Total Chromium (Cr)	2011/09/02		99	%	80 - 120
		Total Cobalt (Co)	2011/09/02		101	%	80 - 120
		Total Copper (Cu)	2011/09/02		NC	%	80 - 120
		Total Lead (Pb)	2011/09/02		103	%	80 - 120
		Total Nickel (Ni)	2011/09/02		101	%	80 - 120
		Total Zinc (Zn)	2011/09/02		NC	%	80 - 120
	Spiked Blank	Total Arsenic (As)	2011/09/02		95	%	80 - 120
		Total Cadmium (Cd)	2011/09/02		102	%	80 - 120
		Total Chromium (Cr)	2011/09/02		98	%	80 - 120
		Total Cobalt (Co)	2011/09/02		100	%	80 - 120
		Total Copper (Cu)	2011/09/02		101	%	80 - 120
		Total Lead (Pb)	2011/09/02		102	%	80 - 120
		Total Nickel (Ni)	2011/09/02		101	%	80 - 120
		Total Zinc (Zn)	2011/09/02		90	%	80 - 120
	Method Blank	Total Arsenic (As)	2011/09/02	<0.0002		mg/L	
		Total Cadmium (Cd)	2011/09/02	<0.000005		mg/L	
		Total Chromium (Cr)	2011/09/02	<0.001		mg/L	
		Total Cobalt (Co)	2011/09/02	<0.0003		mg/L	
		Total Copper (Cu)	2011/09/02	<0.0002		mg/L	
		Total Lead (Pb)	2011/09/02	<0.0002		mg/L	
		Total Nickel (Ni)	2011/09/02	<0.0005		mg/L	
		Total Zinc (Zn)	2011/09/02	<0.003		mg/L	
	RPD	Total Arsenic (As)	2011/09/02	NC		%	20
		Total Chromium (Cr)	2011/09/02	NC		%	20
		Total Cobalt (Co)	2011/09/02	NC		%	20
		Total Copper (Cu)	2011/09/02	2.2		%	20
		Total Lead (Pb)	2011/09/02	3.5		%	20
		Total Nickel (Ni)	2011/09/02	NC		%	20
		Total Zinc (Zn)	2011/09/02	0.8		%	20
5145089 NK3	Matrix Spike [BK0405-01]	O-TERPHENYL (sur.)	2011/09/03		100	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2011/09/03		128	%	50 - 130
		F3 (C16-C34 Hydrocarbons)	2011/09/03		111	%	50 - 130
		F4 (C34-C50 Hydrocarbons)	2011/09/03		122	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2011/09/02		100	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2011/09/02		106	%	70 - 130
		F3 (C16-C34 Hydrocarbons)	2011/09/02		101	%	70 - 130
		F4 (C34-C50 Hydrocarbons)	2011/09/02		123	%	70 - 130
	Method Blank	O-TERPHENYL (sur.)	2011/09/02		95	%	50 - 130
		F2 (C10-C16 Hydrocarbons)	2011/09/02	<0.1		mg/L	

IEG CONSULTANTS LTD.
Attention: JEFF WHITTER
Client Project #: PIN-3
P.O. #: A07001A02
Site Location: PIN-3

Quality Assurance Report (Continued)

Maxxam Job Number: CB181052

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5145089 NK3	Method Blank	F3 (C16-C34 Hydrocarbons)	2011/09/02	<0.1		mg/L	
		F4 (C34-C50 Hydrocarbons)	2011/09/02	<0.1		mg/L	
	RPD	F2 (C10-C16 Hydrocarbons)	2011/09/03	NC		%	40
		F3 (C16-C34 Hydrocarbons)	2011/09/03	NC		%	40
		F4 (C34-C50 Hydrocarbons)	2011/09/03	NC		%	40
5148748 AJ1	Matrix Spike [BK0405-02]	1,4-Difluorobenzene (sur.)	2011/09/06		106	%	70 - 130
		4-BROMOFLUOROBENZENE (sur.)	2011/09/06		107	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2011/09/06		95	%	70 - 130
		(C6-C10)	2011/09/06		125	%	70 - 130
	Spiked Blank	1,4-Difluorobenzene (sur.)	2011/09/03		102	%	70 - 130
		4-BROMOFLUOROBENZENE (sur.)	2011/09/03		108	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2011/09/03		106	%	70 - 130
		(C6-C10)	2011/09/03		110	%	70 - 130
	Method Blank	1,4-Difluorobenzene (sur.)	2011/09/03		105	%	70 - 130
		4-BROMOFLUOROBENZENE (sur.)	2011/09/03		90	%	70 - 130
		D4-1,2-DICHLOROETHANE (sur.)	2011/09/03		102	%	70 - 130
		(C6-C10)	2011/09/03			%	
	RPD [BK0400-02]	F1 (C6-C10) - BTEX	2011/09/03	<100		ug/L	
		(C6-C10)	2011/09/03	<100		ug/L	
		F1 (C6-C10) - BTEX	2011/09/03	NC		%	40
		LH (C5-C10)	2011/09/03	NC		%	40
		(C6-C10)	2011/09/03	NC		%	40
5150991 JMS	Matrix Spike	Total Mercury (Hg)	2011/09/06		105	%	80 - 120
	Spiked Blank	Total Mercury (Hg)	2011/09/06		104	%	80 - 120
	Method Blank	Total Mercury (Hg)	2011/09/06	<0.002		ug/L	
	RPD	Total Mercury (Hg)	2011/09/06	NC		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

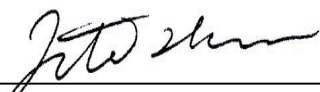
Validation Signature Page

Maxxam Job #: B181052

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



Janet Gao, Senior Analyst, Organics Department



LILI ZHOU, Senior analyst, Inorganic department.

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.



Chain of Custody

Calgary: 4000 1st St. NE, T2E 6P8, Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
Edmonton: 5331 - 48 Street, T6B 2B4, Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8869
www.maxxamanalytics.com

A034056

Company:	Invoice To:	C/O Report Address	Report To:	Same as Invoice	Report Distribution (E-Mail):	REGULATORY GUIDELINES:
Contact:	IEG Nunasi				jwhiter@klohn.com	☐ AT1
Address:	Jeff Whiter				epacholko@klohn.com	☐ CCME
Contact #s:	500, 2610 Hopewell Place NE					☐ Regulated Drinking Water
	Prov: Calgary, AB					☐ Other:
	PC: T1Y 7J7					
	Ph: 403-274-3424					
	Cell: -					

PO #: A07001A02
Project # / Name: PIN-3
Site Location: PIN-3
Quote #:
Sampled By: CTP

Service Requested: ☐ RUSH (Contact lab to reserve)
☒ REGULAR (5 to 7 Days)

Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YYMMDD 24:00	See reverse for package specifics									
				BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity	Assessment ICP Metals	Basic Class II Landfill	SOIL			
1	WS11-001	GW	11/08/24 15:13										
2	WS11-006	GW	11/08/25 10:28										
3	WS11-012	GW	11/08/25 19:13										
4													
5													
6													
7													
8													
9													
10													
11													
12													

Please indicate Filtered, Preserved or Both (F, P, FP)

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
Carlin Pacholko	11/08/27	10:00
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:
Did not field filter or acidify samples.
See email for lab codes.

of Jars Used & Not Submitted

WATER		Other Analysis		SOIL																																																																																																																																																																																																																																																																																																						
☐ BTEX F1	☐ VOCs	☐ BTEX F1-F2	☐ BTEX F1-F4	☐ Routine Water	☐ Turb	☐ F	☐ TOC	☐ DOC	☐ Regulated Metals	☐ Dissolved	☐ Mercury	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	☐ Total	☐ Dissolved	<

Parminder Virk

B181454 & B 181052

From: Whitter, Jeff [JWhitter@klohn.com]
Sent: Thursday, September 01, 2011 2:49 PM
To: Parminder Virk; Beavis, Krista
Subject: RE: PIN 3 - Total Metals B181052

Parminder,

Yes your interpretation of the required analysis is correct.

The direction to use the unpreserved water sample is also correct for the total metals analysis. As for the method used for you to report total metals I cannot comment as I do not know how to perform the analysis. I expect that to be your expertise.

Thanks
Jeff

From: Parminder Virk [mailto:PVirk@maxxam.ca]
Sent: Thursday, September 01, 2011 2:40 PM
To: Whitter, Jeff; Beavis, Krista
Cc: Parminder Virk
Subject: RE: PIN 3 - Total Metals B181052

Hi Jeff and Krista,

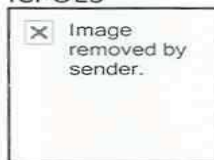
As per our conversation today, we will be analysing the following parameters only:

- F1 (C6-C10)
- F2 (C10-C16)
- F3 (C16-C34)
- F4 (C34-C50)
- PCB including total aroclor
- Total Metals - only Arsenic, Cadmium, Chromium, Cobalt, Copper, Lead, Nickel, Zinc and Mercury

For Total metals analysis in water samples, we will be using unpreserved sample (as per your request) that will undergo strong acid digestion before loading onto the instruments. Please confirm by responding to this email.

Our standard procedures for total metals analysis are based on the following primary reference methods:

ICPOES



ICPMS

2011/09/01

 Image removed by sender.

Please let me know if you have any questions regarding this.

Thank you.

Parminder Virk
Environmental Project Manager

Office 403 219 3669

From: Whitter, Jeff [mailto:JWhitter@klohn.com]
Sent: Thursday, September 01, 2011 11:24 AM
To: Parminder Virk
Subject: PIN 3 - Total Metals B181052

Parminder,

I have reviewed the project terms of reference, and it states that we do not need to field preserve the samples and that the total metals analysis should be done on an un-preserved sample as per the correct analytical method.

Please use the unpreserved samples to complete the analysis.

Also can you confirm that the confirmation report will be sent to us for the soil samples?

Jeff

Jeff Whitter, P.Eng.
Hydrogeologist

Klohn Crippen Berger 500 - 2618 Hopewell Place NE, Calgary AB T1Y 7J7 CANADA
D: 403.730.6837 | T: 403.274.3424 | F: 403.274.5349 | jwhitter@klohn.com | www.klohn.com

If you have received this email in error, please delete the original message.

2011/09/01

APPENDIX H

QA/QC

Table H1. Soil QA/QC

	Sample Ident.	Sample Location	Depth (m)	Laboratory	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	PCB Total Aroclors (mg/kg)
Average RSD	SS11-008	P3-16	0.4-0.5	Kaizen	<2	<0.1	15.0	1.5	3.2	<5	<0.004	11.1	10.1	43	<0.45
	SS11-009*	P3-16	0.4-0.5	Maxxam	<1	<0.1	5	2	<5	2	<0.05	4	<10	<42	<0.010
					-	-	10.00	1.75	-	-	-	7.55	-	-	-
Average RSD					-	-	71%	20%	-	-	-	66%	-	-	-
	SS11-013	P3-1	0.4-0.5	Kaizen	2.0	<0.1	18.9	2.0	3.3	<5	0.006	13.1	9.7	145	<0.45
	SS11-014*	P3-1	0.4-0.5	Maxxam	1	0.1	4	2	<5	3	<0.05	5	<10	<42	<0.010
Average RSD					1.50	-	11.45	2.00	-	-	-	9.05	-	-	-
					47%	-	92%	0%	-	-	-	63%	-	-	-
Average RSD	SS11-015	P3-2	0-0.15	Kaizen	<2	0.2	31.8	3.2	10.9	<5	<0.004	20.0	22.6	19	<0.45
	SS11-016*	P3-2	0-0.15	Maxxam	<1	<0.1	6	3	8	2	<0.05	10	<10	<42	<0.010
					-	-	18.90	3.10	9.45	-	-	15.00	-	-	-
Average RSD					-	-	97%	5%	22%	-	-	47%	-	-	-
	SS11-022	MW-6	0-0.15	Kaizen	<2	<0.1	21.7	2.6	6.5	<5	0.004	13.8	13.8	34	<0.45
	SS11-023*	MW-6	0-0.15	Maxxam	<1	<0.1	6	2	6	1	<0.05	6	<10	<42	<0.010
Average RSD					-	-	13.85	2.30	6.25	-	-	9.90	-	-	-
					-	-	80%	18%	6%	-	-	56%	-	-	-
Average RSD	SS11-027	MW-8	0-0.15	Kaizen	<2	<0.1	<5	1.7	5.1	<5	<0.004	4.2	12.5	15	<0.45
	SS11-028*	MW-8	0-0.15	Maxxam	<1	<0.1	3	1	<5	<1	<0.05	3	<10	<42	<0.010
					-	-	-	1.35	-	-	-	3.60	-	-	-
Average RSD					-	-	-	37%	-	-	-	24%	-	-	-
	SS11-029	MW-8	0.4-0.5	Kaizen	<2	<0.1	<5	2.0	4.1	<5	<0.004	4.3	12.3	<15	<0.45
	SS11-030*	MW-8	0.4-0.5	Maxxam	<1	<0.1	4	2	<5	<1	<0.05	3	<10	<42	<0.010
Average RSD					-	-	-	2.00	-	-	-	3.65	-	-	-
					-	-	-	0%	-	-	-	25%	-	-	-
Average RSD	SS11-048	MW-11	0-0.15	Kaizen	<2	<0.1	22.9	3.7	7.6	<5	0.004	12.1	46.9	99	<0.45
	SS11-073*	MW-11	0-0.15	Kaizen	<2	<0.1	6.4	1.6	4.3	<5	<0.004	4.9	8.6	33	<0.45
					-	-	14.65	2.65	5.95	-	-	8.50	27.75	66.00	-
Average RSD					-	-	80%	56%	39%	-	-	60%	98%	71%	-
	SS11-049	MW-11	0.4-0.5	Kaizen	<2	<0.1	<5	1.0	2.3	<5	<0.004	2.3	6.6	20	<0.45
	SS11-074*	MW-11	0.4-0.5	Kaizen	<2	<0.1	<5	1.3	3.7	<5	<0.004	3.4	7.6	<15	<0.45
Average RSD					-	-	-	1.15	3.00	-	-	2.85	7.10	-	-
					-	-	-	18%	33%	-	-	27%	10%	-	-
Average RSD	SS11-050	MW-10	0-0.15	Kaizen	<2	<0.1	16.2	2.4	5.1	<5	<0.004	10.8	10.1	74	<0.45
	SS11-071*	MW-10	0-0.15	Kaizen	<2	<0.1	13.8	2.1	5.1	<5	<0.004	8.4	8.8	<15	<0.45
					-	-	15.00	2.25	5.10	-	-	9.60	9.45	-	-
Average RSD					-	-	11%	9%	0%	-	-	18%	10%	-	-
	SS11-051	MW-10	0.4-0.5	Kaizen	<2	<0.1	6.3	1.9	4.9	<5	<0.004	5.6	9.5	26	<0.45
	SS11-072*	MW-10	0.4-0.5	Kaizen	<2	<0.1	18.6	2.0	6.1	<5	<0.004	10.7	8.6	29	<0.45
Average RSD					-	-	12.45	1.95	5.50	-	-	8.15	9.05	27.50	-
					-	-	70%	4%	15%	-	-	44%	7%	8%	-
Average RSD	SS11-067	P3-11	0-0.15	Kaizen	2.8	0.9	28.0	1.8	11.0	<5	0.006	16.3	20.2	1823	<0.45
	SS11-068*	P3-11	0-0.15	Kaizen	4.7	1.4	28.9	2.2	18.5	<5	0.004	18.3	21.7	2840	<0.45
					3.75	1.15	28.45	2.00	14.75	-	0.01	17.30	20.95	2331.50	-
Average RSD					36%	31%	2%	14%	36%	-	28%	8%	5%	31%	-
	SS11-069	P3-11	0.4-0.5	Kaizen	2.2	0.1	22.1	2.6	17.5	<5	<0.004	13.3	15.3	61	<0.45
	SS11-070*	P3-11	0.4-0.5	Kaizen	<2	0.1	26.0	2.8	9.7	<5	<0.004	15.2	16.6	47	<0.45
Average RSD					-	0.10	24.05	2.70	13.60	-	-	14.25	15.95	54.00	-
					-	0%	11%	5%	41%	-	-	9%	6%	18%	-

Notes: Relative Standard Deviation (RSDs) calculated by dividing the standard deviation of the comparative set by the average
* Denotes duplicate sample
- Denotes "not calculable"

xx% Exceeds QA/QC goal of 20% for inorganics or 30% for organics.

Table H2. Water QA/QC

	Sample Ident.	Sample Location	Laboratory	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Nickel (mg/L)	Zinc (mg/L)	Total Petroleum Hydrocarbons (mg/L)	PCB Total Aroclors (mg/L)
Average RSD	WS11-001	MW-6	Kaizen	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.024	0.08	<1.5	<0.00045
	WS11-001*	MW-6	Maxxam	0.0007	0.000007	0.009	0.0007	0.0024	0.0002	<0.000002	0.014	0.015	<0.3	<0.000050
				-	-	-	0.00085	-	-	-	0.019	0.0475	-	-
Average RSD	WS11-001	MW-6	Kaizen	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.024	0.08	<1.5	<0.00045
	WS11-002*	MW-6	Kaizen	<0.001	<0.0005	<0.02	0.0010	<0.002	<0.001	<0.0001	0.022	0.06	<1.5	<0.00045
				-	-	-	0.001	-	-	-	0.023	0.07	-	-
Average RSD	WS11-012	MW-12	Kaizen	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.021	0.08	<1.5	<0.00045
	WS11-012*	MW-12	Maxxam	0.0003	0.000013	0.001	0.0005	0.0018	0.0003	<0.000002	0.0049	<0.003	<0.3	<0.000050
				-	-	-	0.00075	-	-	-	0.01295	-	-	-
Average RSD	MW11-012	MW-12	Kaizen	<0.001	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.021	0.08	<1.5	<0.00045
	WS11-013*	MW-12	Kaizen	<0.001	<0.0005	<0.02	0.0010	<0.002	<0.001	<0.0001	0.021	0.08	<1.5	<0.00045
				-	-	-	0.001	-	-	-	0.021	0.08	-	-
Average RSD	WS11-006	MW-15	Kaizen	0.003	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.020	0.09	<1.5	<0.00045
	WS11-006*	MW-15	Maxxam	0.0007	0.000016	<0.001	0.0007	0.0022	0.0003	<0.000002	0.0075	<0.003	<0.3	<0.000050
				0.00185	-	-	0.00085	-	-	-	0.01375	-	-	-
Average RSD	WS11-006	MW-15	Kaizen	0.003	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.020	0.09	<1.5	<0.00045
	WS11-007*	MW-15	Kaizen	0.003	<0.0005	<0.02	0.001	<0.002	<0.001	<0.0001	0.021	0.10	<1.5	<0.00045
				0.003	-	-	0.001	-	-	-	0.0205	0.095	-	-
				0%	-	-	0%	-	-	-	3%	7%	-	-

Notes: Relative Standard Deviation (RSDs) calculated by dividing the standard deviation of the comparative set by the average

* Denotes duplicate sample. (Further information located in Table 1 of main report)

- Denotes "not calculable"

xx% Exceeds QA/QC goal of 20% for inorganics or 30% for organics.

APPENDIX I

Field Notes

Visual Inspection Checklist
Inspection Report – Page 1 of 2

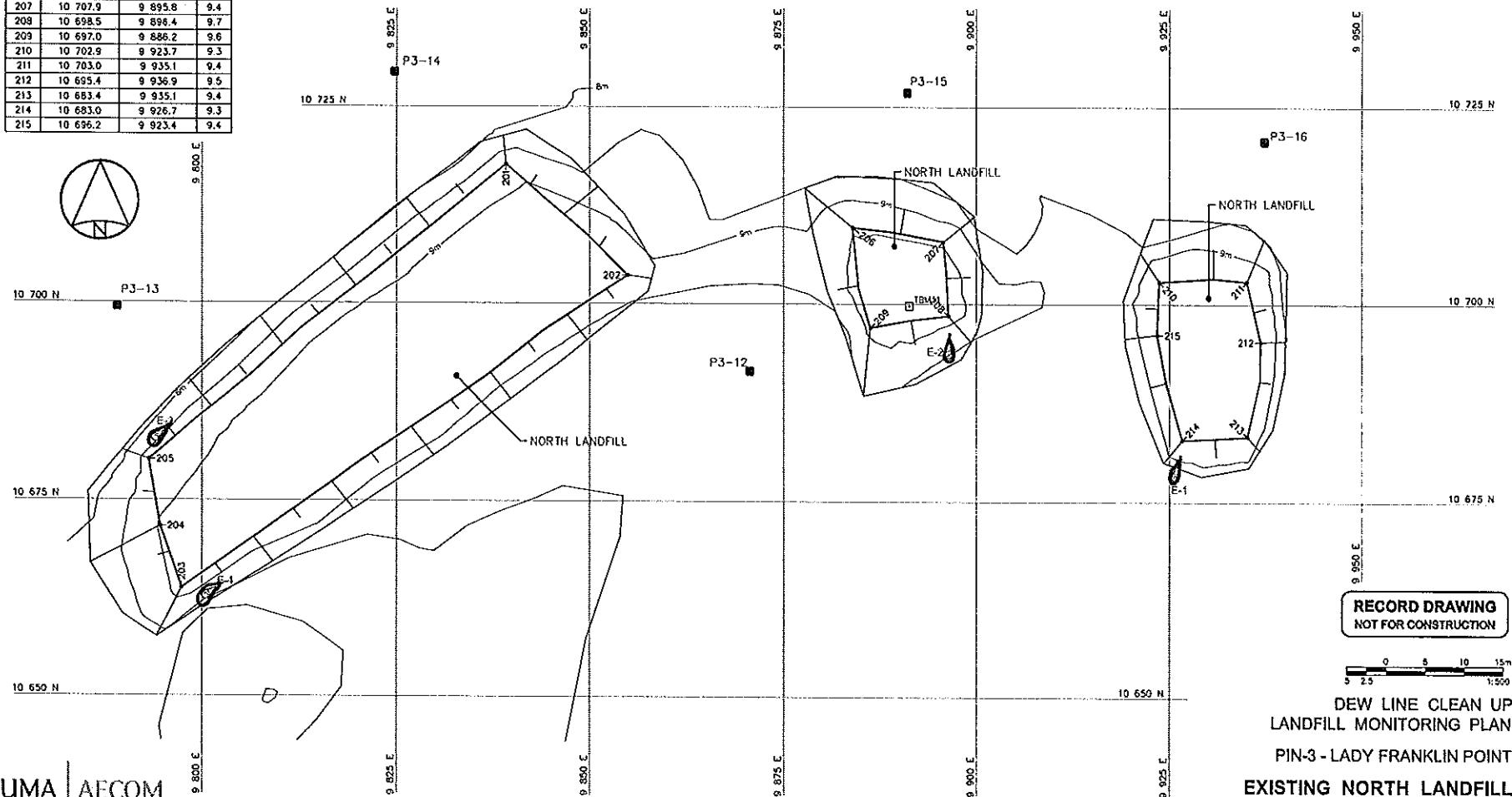
SITE NAME: PW-3 Lady Franklin
LANDFILL/AREA DESIGNATION: North Landfill
DATE OF INSPECTION: Aug. 27, 2006
DATE OF PREVIOUS INSPECTION:
INSPECTED BY: J. Peterson
REPORT PREPARED BY:
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

COORDINATE POINTS (AS-BUILT) NORTH LANDFILL		
NO.	COORDINATES	
	NORTHING	EASTING
201	10 717.7	9 839.2
202	10 703.6	9 854.8
203	10 663.8	9 797.4
204	10 671.7	9 794.6
205	10 680.2	9 783.2
206	10 709.8	9 883.9
207	10 707.9	9 895.8
208	10 698.5	9 898.4
209	10 697.0	9 886.2
210	10 702.9	9 923.7
211	10 703.0	9 935.1
212	10 695.4	9 936.9
213	10 683.4	9 935.1
214	10 683.0	9 926.7
215	10 695.2	9 923.4

BENCHMARKS			
NO.	COORDINATES		ELEV.
	NORTHING	EASTING	
TBM11	10 699.795	9 891.328	9.768

LEGEND:

- TBM11 □ TEMPORARY BENCHMARK
- 201-4 ■ COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- ◁ PHOTOGRAPH REFERENCE
- HHHHHHH- SETTLEMENT
- WW- EROSION
- ▨ PONDING
- (A) OBSERVATION OF CHECKLIST ITEM



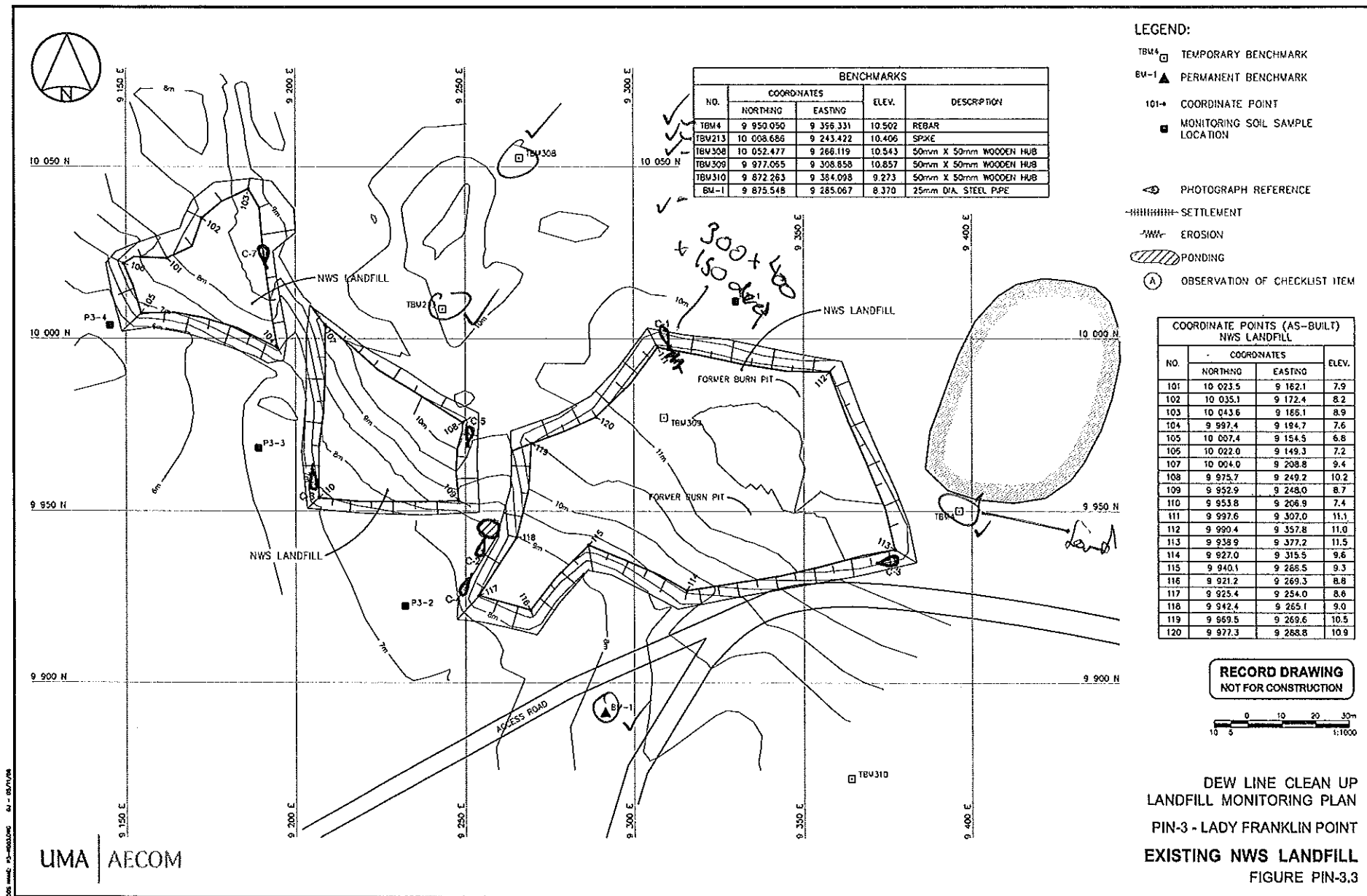
UMA | AECOM

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN
PIN-3 - LADY FRANKLIN POINT
EXISTING NORTH LANDFILL
FIGURE PIN-3.5

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Visual Inspection Checklist
Inspection Report – Page 1 of 2

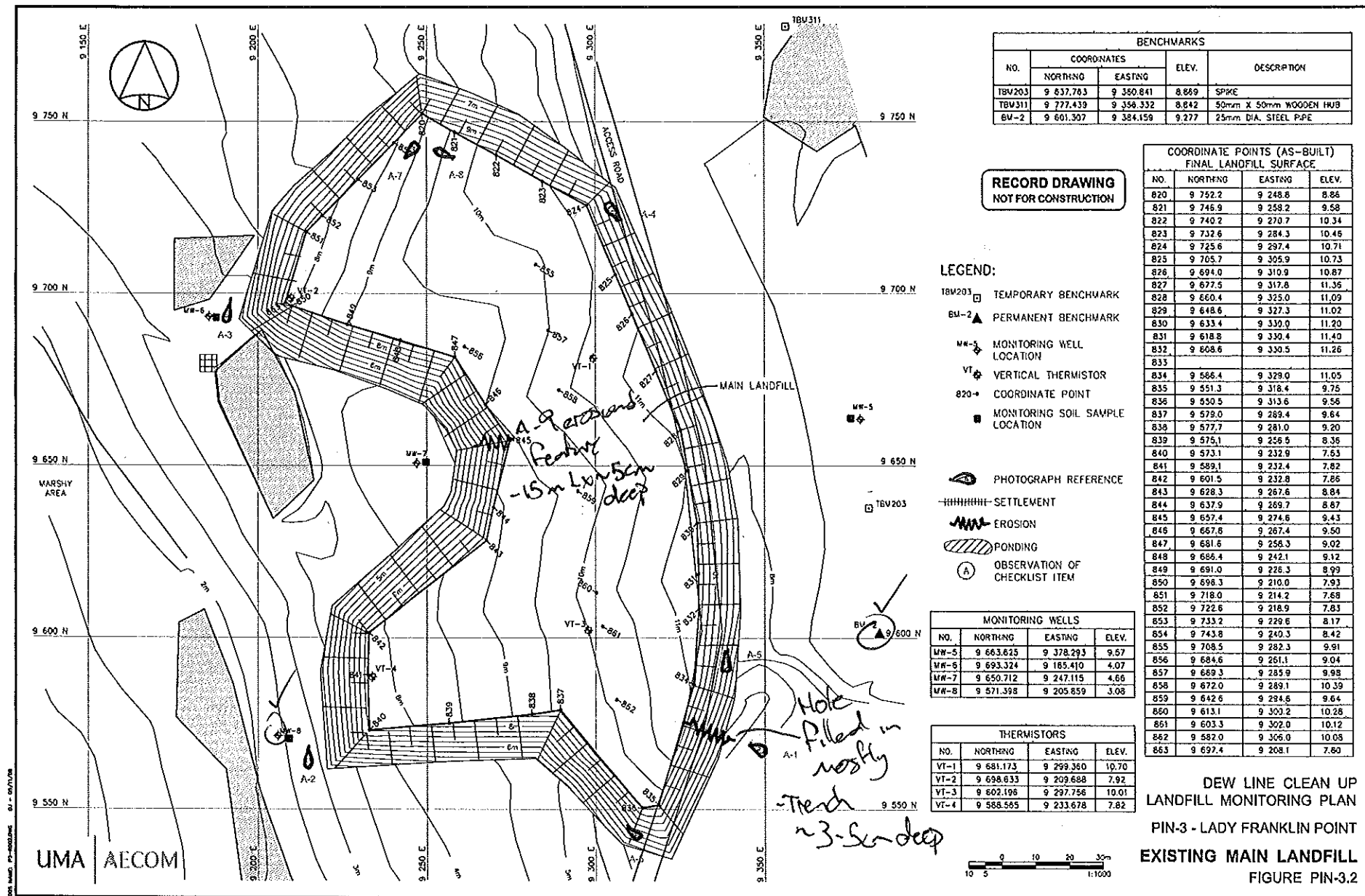
SITE NAME:	PW 3 Lady Franklin
LANDFILL/AREA DESIGNATION:	NWS Landfill
DATE OF INSPECTION:	Aug 24, 2011
DATE OF PREVIOUS INSPECTION:	
INSPECTED BY:	J. Peterson
REPORT PREPARED BY:	
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.	



[illegible]

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME: P10 3- Lady Franklin
LANDFILL/AREA DESIGNATION: North Landfill MATW
DATE OF INSPECTION: Aug. 24, 2011
DATE OF PREVIOUS INSPECTION:
INSPECTED BY: J. Peterson
REPORT PREPARED BY:
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.



BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
TBW203	9 837.783	9 350.841	8.869	SPIKE
TBW311	9 777.439	9 356.332	8.842	50mm X 50mm WOODEN HUB
BW-2	9 601.307	9 384.158	9.277	25mm DIA. STEEL PIPE

**RECORD DRAWING
NOT FOR CONSTRUCTION**

LEGEND:

- TBW203 □ TEMPORARY BENCHMARK
- BW-2 ▲ PERMANENT BENCHMARK
- MW-5 ◻ MONITORING WELL LOCATION
- VT-4 ⊕ VERTICAL THERMISTOR
- B20 → COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION

- 📷 PHOTOGRAPH REFERENCE
- ~~~~~ SETTLEMENT
- ~~~~~ EROSION
- ~~~~~ PONDING
- Ⓐ OBSERVATION OF CHECKLIST ITEM

MONITORING WELLS			
NO.	NORTHING	EASTING	ELEV.
MW-5	9 663.625	9 378.293	9.67
MW-6	9 693.324	9 185.410	4.07
MW-7	9 650.712	9 247.115	4.66
MW-8	9 571.398	9 205.859	3.08

THERMISTORS			
NO.	NORTHING	EASTING	ELEV.
VT-1	9 681.173	9 299.360	10.70
VT-2	9 698.633	9 209.688	7.92
VT-3	9 602.198	9 297.756	10.01
VT-4	9 588.565	9 233.678	7.82

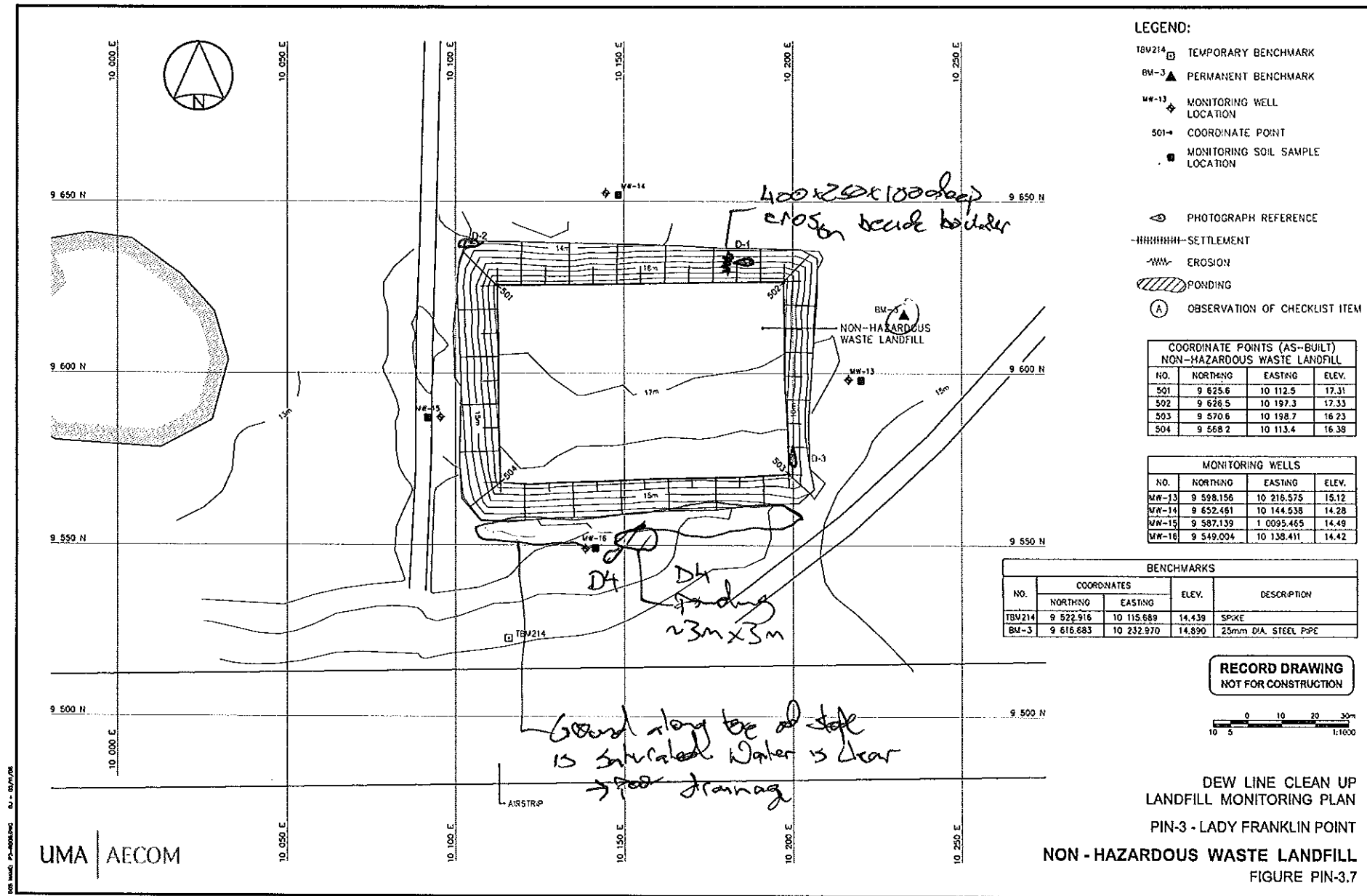
COORDINATE POINTS (AS-BUILT) FINAL LANDFILL SURFACE			
NO.	NORTHING	EASTING	ELEV.
B20	9 752.2	9 248.6	8.86
B21	9 746.9	9 258.2	9.58
B22	9 740.2	9 270.7	10.34
B23	9 732.6	9 284.3	10.46
B24	9 725.6	9 297.4	10.71
B25	9 705.7	9 305.9	10.73
B26	9 694.0	9 310.9	10.87
B27	9 677.5	9 317.8	11.35
B28	9 660.4	9 325.0	11.09
B29	9 648.6	9 327.3	11.02
B30	9 633.4	9 330.0	11.20
B31	9 618.8	9 330.4	11.40
B32	9 608.6	9 330.5	11.26
B33			
B34	9 586.4	9 329.0	11.05
B35	9 551.3	9 318.4	9.76
B36	9 550.5	9 313.6	9.56
B37	9 579.0	9 289.4	9.64
B38	9 577.7	9 281.0	9.20
B39	9 575.1	9 256.5	8.36
B40	9 573.1	9 232.9	7.53
B41	9 589.1	9 232.4	7.82
B42	9 601.5	9 232.8	7.86
B43	9 628.3	9 267.6	8.84
B44	9 637.9	9 269.7	8.87
B45	9 657.4	9 274.6	9.43
B46	9 667.8	9 267.4	9.50
B47	9 681.6	9 256.3	9.02
B48	9 686.4	9 242.1	9.12
B49	9 691.0	9 226.3	8.99
B50	9 698.3	9 210.0	7.93
B51	9 718.0	9 214.2	7.68
B52	9 722.6	9 218.9	7.83
B53	9 733.2	9 229.6	8.17
B54	9 743.8	9 240.3	8.42
B55	9 708.5	9 282.3	9.91
B56	9 684.6	9 261.1	9.04
B57	9 669.3	9 285.9	9.98
B58	9 672.0	9 289.1	10.39
B59	9 642.6	9 294.6	9.64
B60	9 613.1	9 303.2	10.28
B61	9 603.3	9 302.0	10.12
B62	9 582.0	9 306.0	10.08
B63	9 697.4	9 208.1	7.60

DEW LINE CLEAN UP
LANDFILL MONITORING PLAN
PIN-3 - LADY FRANKLIN POINT
EXISTING MAIN LANDFILL
FIGURE PIN-3.2

[illegible]

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME: <i>PIW-3 Lady Franklin</i>
LANDFILL/AREA DESIGNATION: <i>Non-Hazardous Waste Landfill</i>
DATE OF INSPECTION: <i>Aug. 24, 2011</i>
DATE OF PREVIOUS INSPECTION:
INSPECTED BY: <i>J. Peterson</i>
REPORT PREPARED BY:
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.



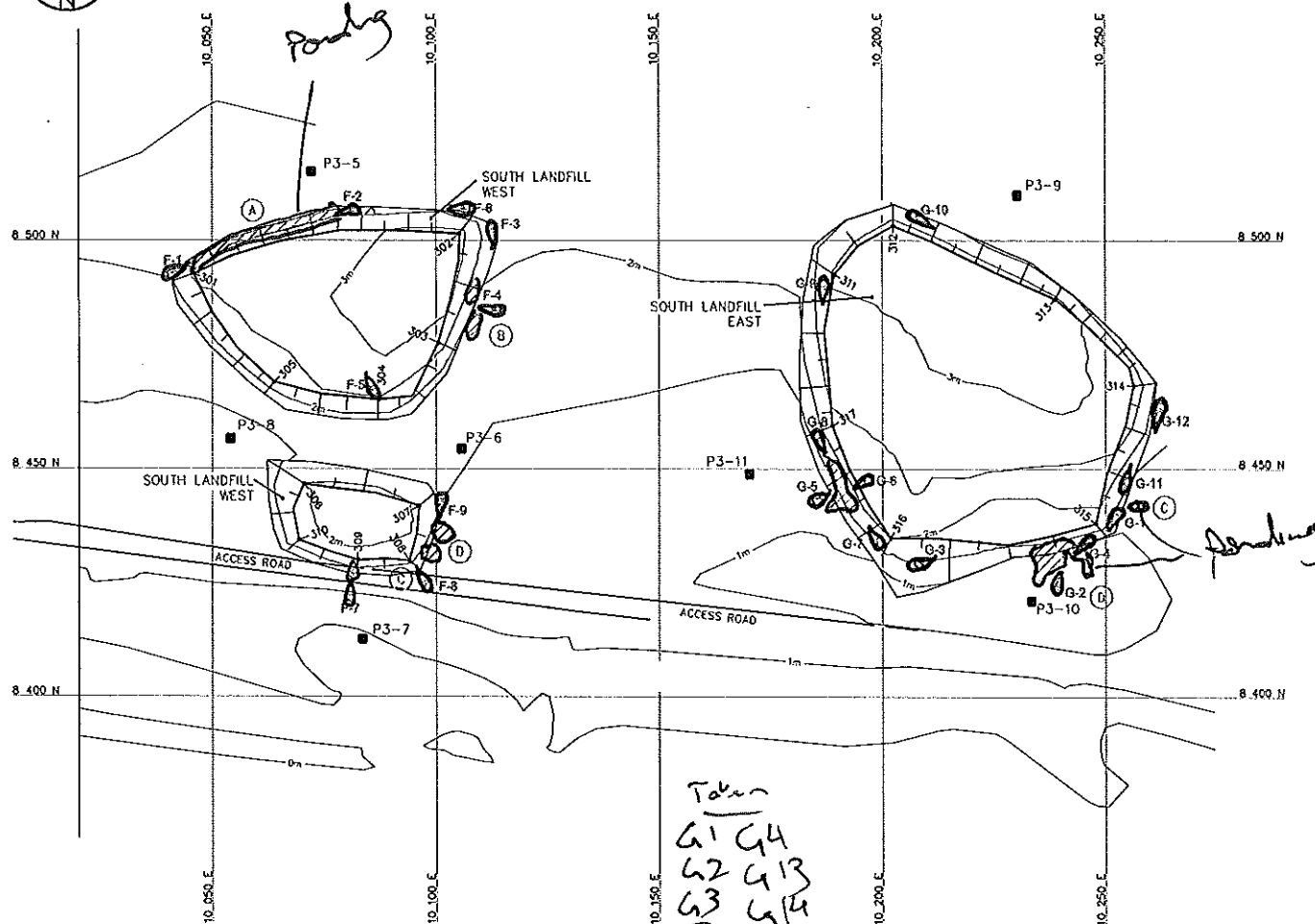
Inspection Report – Page 2 of 2

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill/area design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records Focal length, Location, view point & direction Feature of note Scale	Additional Comments/ Preliminary Stability Assessment
Settlement	N								
Erosion	Y	North slope	400	250	100			D-1	
Frost Action	N								
Animal Burrows	N								
Vegetation	N								
Staining	N								
Vegetation Stress	N								
Seepage Points	N								
Debris Exposed	N								
Presence/ Condition of Monitoring Instruments	Y								
Other Features of Note.								DZ-D#3 DS-D6	Pooling water on South of landfill

*DZ in previous report is an airphoto - not included in this

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME: P103 - Lady Franklin
LANDFILL/AREA DESIGNATION: South Landfill - West
DATE OF INSPECTION: Aug. 25, 2011
DATE OF PREVIOUS INSPECTION:
INSPECTED BY: J. Petersen
REPORT PREPARED BY:
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.



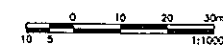
LEGEND:

- 301+ COORDINATE POINT
- MONITORING SOIL SAMPLE LOCATION
- ◁ PHOTOGRAPH REFERENCE
- SETTLEMENT
- W- EROSION
- ▨ PONDING
- (A) OBSERVATION OF CHECKLIST ITEM

COORDINATE POINTS (AS-BUILT) SOUTH LANDFILL - WEST		
NO.	COORDINATES	
	NORTHING	EASTING
301	8 492.9	10 045.9
302	8 501.6	10 105.3
303	8 477.6	10 103.5
304	8 465.2	10 087.2
305	8 469.1	10 063.8
306	8 446.7	10 070.4
307	8 442.1	10 095.1
308	8 430.0	10 094.0
309	8 430.1	10 082.4
310	8 434.4	10 069.3

COORDINATE POINTS (AS-BUILT) SOUTH LANDFILL - EAST		
NO.	COORDINATES	
	NORTHING	EASTING
311	8 492.7	10 189.2
312	8 503.4	10 202.4
313	8 487.3	10 239.9
314	8 468.3	10 256.3
315	8 438.2	10 247.8
316	8 435.0	10 201.6
317	8 459.5	10 188.8

RECORD DRAWING
NOT FOR CONSTRUCTION



DEW LINE CLEAN UP
LANDFILL MONITORING PLAN
PIN-3- LADY FRANKLIN POINT
EXISTING SOUTH LANDFILL
FIGURE PIN-3.4

UMA | AECOM

Taken
G1 G4
G2 G13
G3 G14
G7 G9
G5 G15
G6 G16
G8 G17
G10 G18
G11 G19 → East View
G12

Inspection Report – Page 2 of 2

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill/area design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records Focal length, Location, view point & direction Feature of note Scale	Additional Comments/ Preliminary Stability Assessment
Settlement	N								
Erosion	N								
Frost Action	N								
Animal Burrows	N								
Vegetation	Y					64%	Small weeds (minor)		
Staining	Y						iron oxidized HC steers	Y	
Vegetation Stress	N								
Seepage Points	Y						Pooling surrounding majority of landfill	Y	
Debris Exposed	Y								
Presence/ Condition of Monitoring Instruments	None								
Other Features of Note.	N/A								

Visual Inspection Checklist
Inspection Report – Page 1 of 2

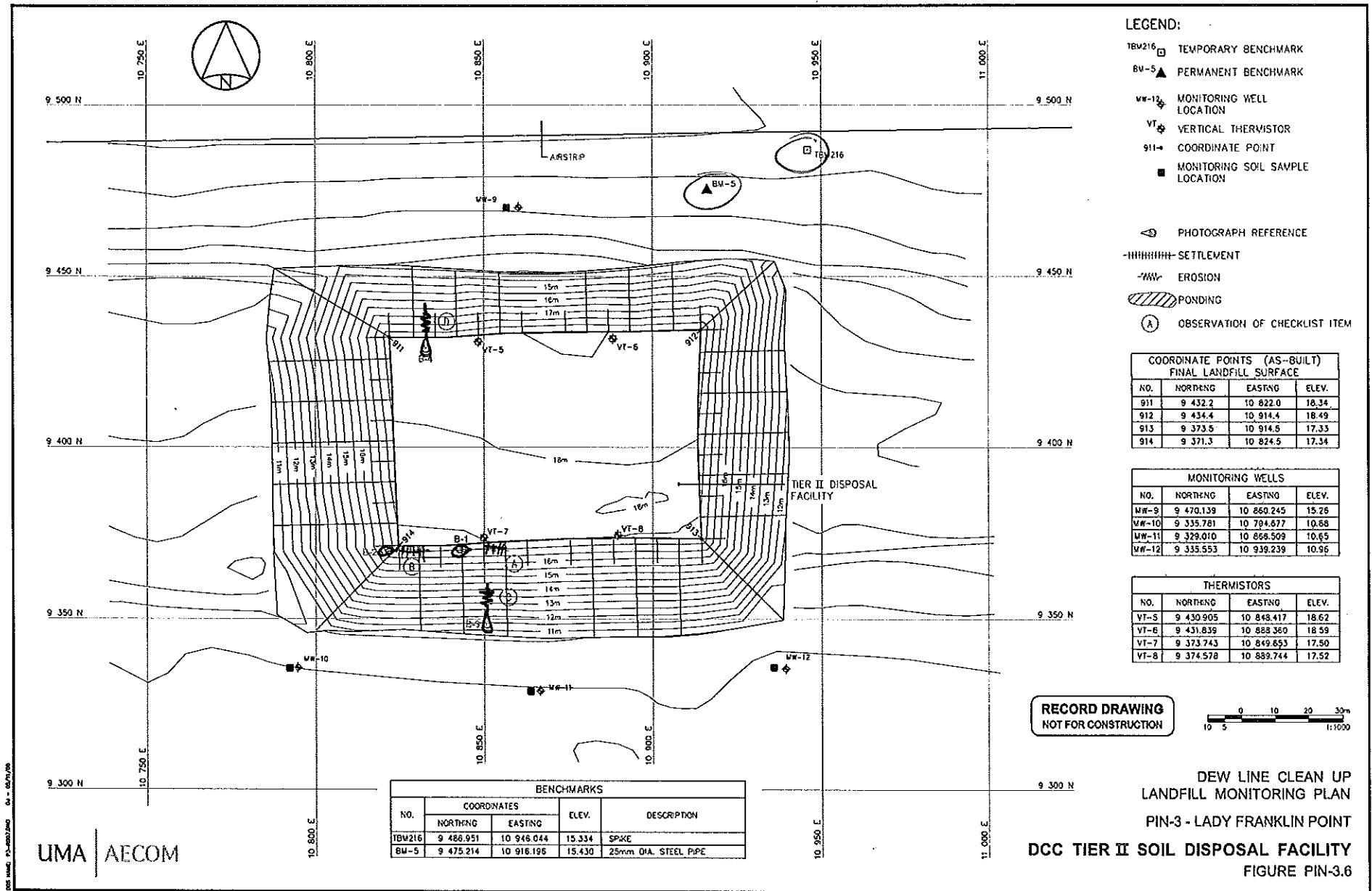
SITE NAME: PW 3-Lady Franklin
LANDFILL/AREA DESIGNATION: South Landfill East
DATE OF INSPECTION: Aug. 25, 2011
DATE OF PREVIOUS INSPECTION:
INSPECTED BY: J. Peterson
REPORT PREPARED BY:
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.

Inspection Report – Page 2 of 2

Checklist Item	Present Yes/No	Location (Describe relative to existing monuments/features and relative to landfill/area design i.e. surface, berms, toe)	Length	Width	Depth	Extent relative to Area extent of Landfill/ Area (%)	Description	Photographic Records Focal length, Location, view point & direction Feature of note Scale	Additional Comments/ Preliminary Stability Assessment
Settlement	N								
Erosion	N								
Frost Action	N								
Animal Burrows	N								
Vegetation	N	Surrounding landfill							
Staining	Y						HC/Rst/Bit shad rocks & soil	Y	
Vegetation Stress	N						4. No veg. stress as a result		
Seepage Points	Y						Pooling surrounding major on pad		
Debris Exposed	Y						45 Gallon drum along top of landfill		
Presence/ Condition of Monitoring Instruments	N/A								
Other Features of Note.	N/A								

Visual Inspection Checklist
Inspection Report – Page 1 of 2

SITE NAME: AEW 3 - Lady Franklin
LANDFILL/AREA DESIGNATION: Tier II Solid Disposal Facility
DATE OF INSPECTION: Aug. 25, 2011
DATE OF PREVIOUS INSPECTION:
INSPECTED BY: J. Peterson
REPORT PREPARED BY:
The preparer represents to the best of the preparer's knowledge, the following statements and observations are true and correct and to the best of the preparer's actual knowledge, no material facts have been suppressed or misstated.



[illegible]



Project No.: _____
Project: PIN-3 monitoring
Client: Kitnuna

Date(s): August 29, 2011
Field Staff: Ryan, Jared, Collin
Contractor: _____
Weather Conditions: overcast 40°

[illegible]

Nothing

Page of



Project No.: _____
Project: PIN-3 monitoring
Client: _____

Date(s): August 25, 2011
Field Staff:
Contractor:
Weather Conditions: overcast 30°C

Purpose of Visit:

Health and Safety Issues

None

Follow up Required



DAILY FIELD REPORT

Date(s): August 26, 2011
Field Staff:
Contractor:
Weather Conditions: overcast 60c

Purpose of Visit:

Health and Safety Issues

None

Follow up Required

North LF

August 24, 2011

SS11-001 - Location = P3-12
Depth = 0-0.15

SS11-002 - P3-12
Depth = 40-50 cm

SS11-003 - P3-13
Depth = 0-0.15m

SS11-004 - P3-13
Depth = 0.4-0.5m

SS11-005 - P3-14
Depth = 0-0.15

SS11-006 - P3-14
Depth = 0.3-0.4 (refusal)

SS11-007 - P3-16
Depth = 0.00-0.15m

SS11-008 - P3-16 Depth = 0.4-0.5

SS11-009 - P3-16 Depth 0.4-0.5 (Duplicate)

SS11-010 - P3-15 Depth 0.0-0.15

SS11-011 - P3-15 Depth 0.4-0.5

NWS landfill

August 24, 2011

SS11-012 - P3-1 Depth 0.0-0.15

SS11-013 - P3-1 Depth 0.4-0.5

SS11-014 - P3-1 (0.4-0.5m) (Dup)

SS11-015 - P3-2 Depth 0.0-0.15

SS11-016 - P3-2 0.0-0.15m (Dup)

SS11-017 - P3-2 0.4-0.5m

SS11-018 - P3-3 Depth 0.0-0.15

SS11-019 - P3-3 Depth 0.4-0.5

SS11-020 - P3-4 Depth 0.0-0.15

SS11-021 - P3-4 Depth 0.4-0.5

Main LF

SS11-022 - MW6 Depth 0.0-0.15

SS11-023 - MW6 0.0-0.15 (Dup)

SS11-024 - MW6 0.4-0.5m

SS11-025 - MW7 0.0-0.15

SS11-026 - MW7 0.4-0.5

SS11-027 - MW8 0-0.15

SS11-028 MW8 0-0.15 (Dup)

SS11-029 MW8 0.4-0.5

SS11-030 MW8 0.4-0.5 (Dup)

FIELD

Aug 24, 2011

Main LF

SS11-031 - MW5 0.0-0.15

SS11-032 - MW5 0.4-0.5

Non-Haz waste

SS11-033 - MW16 0.0-0.15

SS11-034 - MW16 0.3-0.4 (refusal)

SS11-035 - MW13 0.0-0.15

SS11-036 - MW13 0.4-0.5

SS11-037 - MW14 0-0.15

SS11-038 - MW14 0.4-0.5

SS11-039 - MW15 0.0-0.15

SS11-040 - MW15 0.0-0.15 (Dup)

SS11-041 - MW15 0.4-0.5

Tier II Soil disposal

SS11-042 - MW9 0.0-0.15

SS11-043 - MW9 0.0-0.15 (Dup)

SS11-044 - MW9 0.4-0.5

Aug 24

Tier II

SS11-045 - MW12 0.0-0.15

SS11-046 - MW12 0.0-0.15 (Dup)

SS11-047 - MW12 0.4-0.5

SS11-048 - MW11 0.0-0.15

SS11-049 - MW11 0.4-0.5

SS11-050 - MW10 0.0-0.15

SS11-051 - MW10 0.4-0.5

South Shore

August 25, 2011

SS11-052 - P3-7 0.0-0.15

SS11-053 - P3-7 0.4-0.5

SS11-054 - P3-6 0.0-0.15

SS11-055 - P3-6 0.0-0.15 (Dup)

SS11-056 - P3-6 0.4-0.5

SS11-057 - P3-8 0.0-0.15

SS11-058 - P3-8 0.4-0.5

South LF

Aug 25, 2011

SS11-054	- P3-5	0.0-0.15
SS11-060	- P3-5	0.4-0.5
SS11-061	- P3-5	0.4-0.5 (Dup)

SS11-062	- P3-9	0.0-0.15
SS11-063	- P3-9	0.4-0.5

SS11-064	- P3-10	0.0-0.15
SS11-065	- P3-10	0.0-0.15 (Dup)
SS11-066	- P3-10	0.4-0.5

SS11-067	- P3-11	0-0.15
SS11-068	- P3-11	0-0.15 (Dup)
SS11-069	- P3-11	0.4-0.5
SS11-070	- P3-11	0.4-0.5 (Dup)

Tier II Soil disposal

SS11-071	- MW10	0.0-0.15 (Dup)
SS11-072	- MW10	0.4-0.5 (Dup)
SS11-073	- MW11	0.0-0.15 (Dup)
SS11-074	- MW11	0.4-0.5 (Dup)



Klohn Crippen Berger

DAILY FIELD REPORT

Project No.: A07001A02
Project: PIN-3
Client: Kitnuna

Date(s): Aug 23 - Aug 26, 2011
Field Staff: Ryan, Jared, Carlin
Contractor:
Weather Conditions: varies

Purpose of Visit:

Monitor groundwater levels, collect groundwater samples, record field measurements at 12 monitoring wells.

Time	Summary of Activities
Aug 23	Arrive on site, set up camp and discuss project
Aug 24	Organize field equipment and bottles Monitor gw levels, field parameters, and collect groundwater samples at 4 wells at Main Landfill - took picture of each well - all wells in good condition - did not field filter or acidify samples - collected duplicate from MW-6
Aug 25	Monitor gw levels + field parameters, and collect gw samples at 4 wells at Non-Hazardous Waste Facility and 2 wells at Tier II Soil Disposal. - took picture of each well - all wells in good condition - did not field filter or acidify samples - collected duplicates from MW-12 and MW-15 - MW-9 and MW-10 were dry

Health and Safety Issues

N/A

Follow up Required

N/A

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	Aug 24/11	Time:	19:45
Names of Samplers:	Carlin Pacheco		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-5		
Sample Number:	WS11-005		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	48		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	226.7	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	178.7		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	3.70.5	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	143.8		
Static volume of water in well (mL)=	2823.5		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	7.15		
Final Conductivity (µS/cm)=	270 mS/cm		
Final Temperature (degC)=	5.3		

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(date)

Aug 31, 2014

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	Aug 24/11	Time:	13:57
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-6		✓
Sample Number:	WS11-001		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	50.5		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	144.9	Measurement method: (meter, tape, etc)	Interface Probe
Static water level (cm)= (below ground surface)	94.0		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	376.5	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	231.6		
Static volume of water in well (mL)=	4547.5		
Free product thickness (mm)=	~~111~~ 0	Measurement method: (meter, paste, etc)	Interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	7.21		
Final Conductivity (uS/cm)=	1591 uS/cm		
Final Temperature (degC)=	5.5		

AB

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Main Landfill

Well ID: MW-6
W511-001

General Information:

Project Name: Kitik07 DEW Line Monitoring

Project Number: A07001A02

Sampling Date: Aug 24, 2011

Field Personnel: Cathin Pacholko

Weather: partly cloudy 7°C

TOV: 0.0 (ppm)

Activity: (develop, purge, sample)

Purging Equipment: peristaltic pump

Sampling Equipment: peristaltic pump

Sampling Depth: 325 (mbtoc)

Well Yield: (high, medium, low)

Well Diameter: 5 cm (mm, inch)

Well Stickup: 50.5 cm (metre, cm, inch, feet)

Initial Water Level: 144.9 (mbtoc) Time: 13:57

Well Refusal Depth: 376.5 cm (mbtoc)

Product Thickness: 0 (mm, inch) interface probe (meter, paste)

Well Total Depth: 350.8 mbg (measured or inferred)

1 Casing Volume: 4547.5 mL (Litre, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
14:23	100	1.0	6.8	7.45	1509					
14:25	100	2.0	5.1	7.37	1535					
14:27	100	3.0	4.8	7.36	1544					
14:30	100	0.7	5.7	7.34	1547			1100		turbidity
14:35	100	1.2	5.2	7.32	1559			1100	1.558	meter not
14:40	100	1.7	5.7	7.27	1560			1100	1.456	working
14:45	100	2.2	5.3	7.25	1566			725	1.456	correctly.
14:50	100	2.7	5.8	7.22	1579			859	1.457	
14:55	100	3.2	5.7	7.20	1589			727	1.457	clear
15:00	100	3.7	6.1	7.20	1574			18.21	1.457	clear
15:05	100	4.2	5.5	7.20	1597			15.66	1.457	clear

Sample Collection Information:

 include bottle requisition form to indicate ¹number, type and size of containers filled and ²whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes

Comments:

see page 2

Quality Control:

check (✓)

This form is complete () & legible (). Field measurements are within historical values () & stable ().
Meters are calibrated () and units shown (). Well ID has been confirmed () and well condition documented ().
Sample and QC sample IDs recorded (), and containers, analyses, field filtering, and preservation indicated ().
Any discontinuity in time from the start of purging to date and time of sample collection is documented ().

(completed by)

(inspected by)

(date)

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	Aug 24 / 11	Time:	15:56
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Main Landfill		
Monitoring Well ID:	MW-7		
Sample Number:	~~MS-11~~	MS11-003	
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	30.		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	224.6	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	194.6		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	358.7	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	134.1		
Static volume of water in well (mL)=	2633.0		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	12.24		
Final Conductivity (uS/cm)=	936		
Final Temperature (degC)=	5.3		

HB

DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Main Landfill

Well ID: MW-7

General Information:

TOV (ppm)

Well Diameter: 5 cm (mm, inch)

Project Name: **Kitik07 DEW Line Monitoring**

Activity: (develop, purge, sample)

Well Stickup: 30cm (metre, cm, inch, feet)

Project Number: **A07001A02**

Purging Equipment: Depressatizer

Initial Water Level: 224.6 c (mbtoc) Time: 15:58

Sampling Date: August 24, 2011

Sampling Equipment: Resistate

Well Refusal Depth 358.7 C (mbtoc)

Field Personnel: Carlino Pacholko

Sampling Depth: ~ 300 c (mbtoc)

Product Thickness	0	(mm, inch)	interface paste (meter, paste)

Weather: partly cloudy 70°

Well Yield: (high, medium, low)

Well Total Depth: 350 cm b.g. (measured or inferred)

1 Casing Volume: 2633.0 mL (Litre, Imp gal, US gal)

Development and/or Purging Information:

[illegible]

Sample Collection Information: include bottle requisition form to indicate ¹number, type and size of containers filled and ²whether preserved and/or field filtered

[illegible]**Comments:**

Did not filter or acidify samples.

Quality Control:

check (☒)

This form is complete (X) & legible (X). Field measurements are within historical values (X) & stable (X).

Meters are calibrated (X) and units shown (X). Well ID has been confirmed (X) and well condition documented (X).

Sample and QC sample IDs recorded (X), and containers, analyses, field filtering, and preservation indicated (X).

Any discontinuity in time from the start of purging to date and time of sample collection is documented (X).

Carlin Pacholko

Kriste Bowers

Aug 31, 2011

(completed by)

(inspected by)

(date)

Monitoring Well Sampling Record

Site Name:	~~Pin~~ Pin-3	
Date of Sampling Event:	Aug 24/11	Time: 17:07
Names of Samplers:	Carlyn Pacholko	
Landfill Name:	Main Landfill	
Monitoring Well ID:	MW-8	✓
Sample Number:	WS11-004	
Condition of Well:	Good	
Measured Data		
Well pipe height above ground (cm)=	50	
Diameter of well (cm)=	5	
Depth of well installation (cm)= (from ground surface)	350	
Length screened section (cm)=	200	
Depth to top of screen (cm)= (from ground surface)	50	
Depth to water surface (cm)= (from top of pipe)	102.6	Measurement method: (meter, tape, etc) interface probe.
Static water level (cm)= (below ground surface)	~~350~~ 52.6	
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	336.1	Evidence of sludge or siltation: No
Thickness of water column (cm)=	233.5	
Static volume of water in well (mL)=	4584.8	
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc) interface probe.
Purging: (Y/N)	Y	Purging/Sampling Equipment:
Volume Purged Water=	one well volume	peristaltic pump
Decontamination required: (Y/N)	Y	pH, EC, temp probe
Number washes:	1	turbidity meter
Number rinses:	2	
Final pH=	7.16	
Final Conductivity (µS/cm)=	220 µS/cm	
Final Temperature (degC)=	4.9	

HB

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Main Landfill

Well ID: MW-8

General Information:

Project Name: Kitik07 DEW Line Monitoring

TOV: 0.0 (ppm)

Well Diameter: 5cm (mm, inch)

Activity: (develop, purge, sample)

Well Stickup: 50cm (metre, cm, inch, feet)

Project Number: A07001A02

Purging Equipment: peristaltic pump Initial Water Level: 102.6 (mbtoc) Time: 17:07

Sampling Date: August 24/11

Sampling Equipment: peristaltic pump Well Refusal Depth: 336.1 (mbtoc)

Field Personnel: Carlin Pacholko

Sampling Depth: ~285 c (mbtoc) Product Thickness: 0 (mm, inch) interface probe (meter, paste)

Weather: overcast SEC

Well Yield: (high, medium, low) Well Total Depth: 350 cmbg (measured or inferred)

1 Casing Volume: 4584.8 mL (Litres, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
5:14 PM	100	0	6.3	7.90	2.05 mS			86.74	1.032	slight turbid
5:19 PM	100	0.5	4.9	7.38	2.14 mS			66.81	1.038	slight turbid
5:24 PM	100	1.0	5.2	7.23	2.15 mS			72.68	1.032	slight turbid
5:29 PM	100	1.5	4.9	7.20	2.16 mS			45.74	1.032	slight turbid
17:34	100	2.0	5.1	7.18	2.17 mS			15.18	1.032	clear
17:39	100	2.5	4.8	7.17	2.18 mS			13.54	1.033	clear
17:44	100	3.0	5.1	7.17	2.19 mS			6.03	1.033	clear
17:49	100	3.5	4.6	7.16	2.20 mS			39.96	1.033	clear
17:54	100	4.0	5.1	7.16	2.20 mS			11.48	1.033	clear
17:59	100	4.5	4.9	7.16	2.20 mS			6.96	1.033	clear

Sample Collection Information: include bottle requisition form to indicate ¹number, type and size of containers filled and ²whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes
WS11-004	18:00	X	X	X					Total Metals

Comments:

Did not field filter or acidify.

Quality Control:

check (✓)

This form is complete (X) & legible (X). Field measurements are within historical values (X) & stable (X).

Meters are calibrated (X) and units shown (X). Well ID has been confirmed (X) and well condition documented (X).

Sample and QC sample IDs recorded (X), and containers, analyses, field filtering, and preservation indicated (X).

Any discontinuity in time from the start of purging to date and time of sample collection is documented (X).

(completed by)

Carlin Pacholko

(inspected by)

Kriste Beans

(date)

Aug 31, 2011

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	August 25, 2011	Time:	17:05
Names of Samplers:	Carlton Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-9		
Sample Number:	DRY		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	36		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	~~110~~ dry	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	DRY		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	201.5	Evidence of sludge or siltation:	—
Thickness of water column (cm)=	N/A		
Static volume of water in well (mL)=	—		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	N	Purging/Sampling Equipment:	—
Volume Purged Water=	—		
Decontamination required: (Y/N)	N		
Number washes:	—		
Number rinses:	—		
Final pH=	—		
Final Conductivity (uS/cm)=	—		
Final Temperature (degC)=	—		

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Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	Aug 25, 2011	Time:	17:11
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW 10		
Sample Number:	DRY		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	70		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	DRY	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	DRY		1
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	115.0	Evidence of sludge or siltation:	—
Thickness of water column (cm)=	—		
Static volume of water in well (mL)=	—		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	N	Purging/Sampling Equipment:	—
Volume Purged Water=	—		
Decontamination required: (Y/N)	N		
Number washes:	—		
Number rinses:	—		
Final pH=	—		
Final Conductivity (uS/cm)=	—		
Final Temperature (degC)=	—		

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Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	August 25, 2011	Time:	17:22
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Herb's Soil Disposal Facility		
Monitoring Well ID:	MW-11		
Sample Number:	WS11-011		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	38		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	133.2	Measurement method: (meter, tape, etc)	interface probe.
Static water level (cm)= (below ground surface)	95.2		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	189.1	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	55.9		
Static volume of water in well (mL)=	1097.6		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		
Decontamination required: (Y/N)	✓		
Number washes:	1		
Number rinses:	2		
Final pH=	7.73		
Final Conductivity (uS/cm)=	1511		
Final Temperature (degC)=	4.1		

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	August 25, 2011	Time:	18:50
Names of Samplers:	C. D. L. Pacholko		
Landfill Name:	Tier II Soil Disposal Facility		
Monitoring Well ID:	MW-12		
Sample Number:	WS11-012		
Condition of Well:	Good.		
Measured Data			
Well pipe height above ground (cm)=	56 cm		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	139.0	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	~~227.6~~ 83.0		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	227.6	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	80.6		
Static volume of water in well (mL)=	1739.7		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	7.34		
Final Conductivity ($\mu S/cm$)=	2.29 mS/cm		
Final Temperature (degC)=	3.9		

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Tier II Soil Disposal Facility

Well ID: MW12

General Information:

Project Name: Kitik07 DOW Line Monitoring

TOV: 0.0 (ppm)

Well Diameter: 5cm (mm, inch)

Activity: (develop, purge, sample)

Well Stickup: 56cm (metre, cm, inch, feet)

Project Number: A07001A02

Purging Equipment: peristaltic pump

Initial Water Level: 139.0 (mbtoc) Time: 18:50

Sampling Date: August 25, 2011

Sampling Equipment: peristaltic pump

Well Refusal Depth: 227.6 (mbtoc)

Field Personnel: Carlin Pacholko

Sampling Depth: ~220 (mbtoc)

Product Thickness: 0 (mm, inch) interfacial probe (meter, paste)

Weather: overcast

Well Yield: (high, medium, low)

Well Total Depth: 350cm (measured or inferred)

1 Casing Volume: 1739.7 (Litres, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
18:58	100	0	5.0	7.71	4.19m			17.50	139.8	clear
19:00	100	0.2	3.5	7.47	3.78m					
19:02	100	0.4	3.5	7.42	3.47m		7.48	3.19	1.398	clear
19:04	100	0.6	3.7	7.39	3.13m					
19:06	100	0.8	3.6	7.37	3.05m			15.89	1.398	clear
19:08	100	1.0	3.9	7.35	2.92m					
19:10	100	1.2	4.1	7.35	2.90m			3.19	1.399	clear
19:12	100	1.4	4.1	7.34	2.82m					
19:14	100	1.6	3.9	7.34	2.83m			1.50	1.399	clear
19:16	100	1.8	3.9	7.34	2.79m					

Sample Collection Information:

 include bottle requisition form to indicate ¹number, type and size of containers filled and ²whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes
WS11-012	19:17	x	x	x					Total Metals
WS11-013	19:17	x	x	x					Total Metals

Comments:

Did not field filter or acidify samples.
collected duplicate WS11-013 for kaizen
collected duplicate WS11-012 for Maxxam

Quality Control:

check (✓)

This form is complete (✓) & legible (✓). Field measurements are within historical values (✓) & stable (✓).
Meters are calibrated (✓) and units shown (✓). Well ID has been confirmed (✓) and well condition documented (✓).
Sample and QC sample IDs recorded (✓), and containers, analyses, field filtering, and preservation indicated (✓).
Any discontinuity in time from the start of purging to date and time of sample collection is documented (✓).

Carlin Pacholko

(completed by)

Krista Lewis

(inspected by)

Aug 31, 2011

(date)

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	Aug 25/11	Time:	13:57
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-Hazardous Waste Facility		
Monitoring Well ID:	MW-13		
Sample Number:	WS11-009		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	40		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	150.4	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	100.4		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	361.5	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	211.1		
Static volume of water in well (mL)=	41,44.9		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	8.08		
Final Conductivity (uS/cm)=	647		
Final Temperature (degC)=	4.8		

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Non-Hazardous Waste Landfill

Well ID: MW-13

General Information:

Project Name: Kitik07 DEW Line Monitoring

TOV: 0.0 (ppm)

Well Diameter: 5 cm (mm, inch)

Activity: (develop, purge, sample)

Well Stickup: 40 cm (metre, cm, inch, feet)

Project Number: A07001A02

Purging Equipment: peristaltic pump

Initial Water Level: 150.4 (mbtoc) Time: 13:57

Sampling Date: August 25, 2011

Sampling Equipment: peristaltic pump

Well Refusal Depth: 361.5 (mbtoc)

Field Personnel: Carlin Pacholko

Sampling Depth: 310 (mbtoc)

Product Thickness: 0 (mm, inch) interface probe (meter, paste)

Weather: misty 8°C

Well Yield: (high, medium, low)

Well Total Depth: ~350 mbg (measured or inferred)

1 Casing Volume: 4144.9 mL (Litres, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
14:01	100	0	4.9	9.43	437			7.74	1.574	clear
14:06	100	0.5	4.3	9.58	441			13.19	1.584	clear
14:11	100	1.0	4.3	9.52	447			13.17	1.604	clear
14:16	100	1.5	4.1	9.38	466			5.82	1.618	clear
14:21	100	2.0	4.2	9.17	501			8.40	1.627	clear
14:26	100	2.5	4.3	8.87	535			5.94	1.629	clear
14:31	100	3.0	4.4	8.62	602	pH		4.47	1.629	clear
14:36	100	3.5	4.5	8.41	622	8.41		3.77	1.629	clear
14:41	100	4.0	4.6	8.27	640			4.46	1.630	clear
14:43	100	4.2	4.8	8.08	647			4.98	1.630	clear

Sample Collection Information: include bottle requisition form to indicate 1 number, type and size of containers filled and 2 whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes
WS11-009	14:46	X	X	X					total Metals

Comments:

Did not field filter or preserve acidify samples.

Quality Control:

check (✓)

This form is complete (✓) & legible (✓). Field measurements are within historical values (✓) & stable (✓).

Meters are calibrated (✓) and units shown (✓). Well ID has been confirmed (✓) and well condition documented (✓).

Sample and QC sample IDs recorded (✓), and containers, analyses, field filtering, and preservation indicated (✓).

Any discontinuity in time from the start of purging to date and time of sample collection is documented (✓).

Carlin Pacholko

(completed by)

Krista Benis

(inspected by)

Aug 31, 2011

(date)

Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	August 25/11	Time:	11:15
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-14		
Sample Number:	WS11-008		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	49.5		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	103.2	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	~~377.0~~ 53.7		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	377.0	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	273.8		
Static volume of water in well (mL)=	5376		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	1 well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	7.27		
Final Conductivity (uS/cm)=	1489		
Final Temperature (degC)=	5.9		

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Non-Hazardous Waste Landfill

Well ID: MW-14

General Information:

Project Name: Kitik07 DEW Line Monitoring

Project Number: A07001A02

Sampling Date: August 25/11

Field Personnel: Carlin Pacholko

Weather: overcast, 7°C

TOV: 0.0 (ppm)

Well Diameter: 5 cm (mm, inch)

Activity: (develop, purge, sample)

Well Stickup: 49.5 cm (metre, cm, inch, feet)

Purging Equipment: peristaltic pump

Initial Water Level: 103.2 c (mbtoc) Time: 11:15

Sampling Equipment: peristaltic pump

Well Refusal Depth: 377.0 C (mbtoc)

Sampling Depth: 325 c (mbtoc)

Product Thickness: 0 (mm, inch) interface probe (meter, paste)

Well Yield: (high, medium, low)

Well Total Depth: 350 cmbg (measured or inferred)

1 Casing Volume: 5376 mL (Litre, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
10:30	100	0	7.2	7.54	1593			96.5	1.045	slight turbid
10:35	100	0.5	5.0	7.37	1660			77.34	1.046	slight turbid
10:40	100	1.0	5.1	7.32	1650			47.11	1.046	slight turbid
10:45	100	1.5	5.0	7.29	1623			28.79	1.046	slight turbid
10:50	100	2.0	5.3	7.27	1577			36.86	1.046	slight turbid
10:55	100	2.5	5.6	7.26	1539			19.43	1.046	clear
12:00	100	3.0	5.6	7.25	1516			19.27	1.046	clear
12:05	100	3.5	5.6	7.25	1518			13.04	1.046	clear
12:10	100	4.0	5.8	7.25	1519			2.70	1.046	clear
12:15	100	4.5	5.7	7.26	1499			2.40	1.046	clear
12:20	100	5.0	6.0	7.26	1492			7.17	1.046	clear
12:25	100	5.4	5.9	7.27	1489			6.11	1.046	clear

Sample Collection Information: include bottle requisition form to indicate number, type and size of containers filled and whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes
WS11-008	12:25	X	X	X					Total Metals

Comments:

Did not field filter or acidify samples

Quality Control:

check (✓)

This form is complete (✓) & legible (✓). Field measurements are within historical values (✓) & stable (✓).

Meters are calibrated (✓) and units shown (✓). Well ID has been confirmed (✓) and well condition documented (✓).

Sample and QC sample IDs recorded (✓), and containers, analyses, field filtering, and preservation indicated (✓).

Any discontinuity in time from the start of purging to date and time of sample collection is documented (✓).

(completed by)

Carlin Pacholko

(inspected by)

Kate Davis

(date)

Aug 31, 2011

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Monitoring Well Sampling Record

Site Name:	PIN-3		
Date of Sampling Event:	Aug 25/11	Time:	9:40
Names of Samplers:	Carlin Pacholko		
Landfill Name:	Non-Hazardous Waste Landfill		
Monitoring Well ID:	MW-15		
Sample Number:	WS11-006		
Condition of Well:	Good		
Measured Data			
Well pipe height above ground (cm)=	50		
Diameter of well (cm)=	5		
Depth of well installation (cm)= (from ground surface)	350		
Length screened section (cm)=	200		
Depth to top of screen (cm)= (from ground surface)	50		
Depth to water surface (cm)= (from top of pipe)	144.5	Measurement method: (meter, tape, etc)	interface probe
Static water level (cm)= (below ground surface)	94.5		
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	357.0	Evidence of sludge or siltation:	No
Thickness of water column (cm)=	212.5		
Static volume of water in well (mL)=	4172.4		
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc)	interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:	
Volume Purged Water=	one well volume		peristaltic pump
Decontamination required: (Y/N)	Y		pH, EC, temp probe
Number washes:	1		turbidity meter
Number rinses:	2		
Final pH=	6.96		
Final Conductivity ($\mu S/cm$)=	3.7 SMS/cm		
Final Temperature (degC)=	4.4		

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Non-Hazardous Waste Landfill

Well ID: MW-IS

General Information:

TOV: 0.0 (ppm) Well Diameter: 5 cm (mm, inch)
Project Name: Kitik07 DEW Line Monitoring Activity: (develop, purge, sample) Well Stickup: 50 cm (metre, cm, inch, feet)
Project Number: A07001A02 Purging Equipment: peristaltic pump Initial Water Level: 144.5 cm (mbtoc) Time: 9:40
Sampling Date: August 25/11 Sampling Equipment: peristaltic pump Well Refusal Depth: 357.0 C (mbtoc)
Field Personnel: Carlin Pacholko Sampling Depth: ~300 C (mbtoc) Product Thickness: 0 (mm, inch) interface probe (meter, paste)
Weather: overcast, no wind, 7°C Well Yield: (high, medium, low) Well Total Depth: 350 cm bg (measured or inferred)
1 Casing Volume: 4172.4 mL (Litres, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
9:45	100	0	5.0	7.02	3.96 mS			22.76	1.448	clear
9:50	100	0.5	5.2	6.98	3.97 mS			58.31	1.449	clear
9:55	100	1.0	4.2	6.97	3.89 mS			3.24	1.449	clear
10:00	100	1.5	4.5	6.97	3.85 mS			14.05	1.448	clear
10:05	100	2.0	4.0	6.97	3.81 mS			3.92	1.449	clear
10:10	100	2.5	4.6	6.97	3.81 mS			5.24	1.449	clear
10:15	100	3.0	3.9	6.96	3.79 mS			1.24	1.450	clear
10:20	100	3.5	4.5	6.97	3.77 mS			1.33	1.450	clear
10:25	100	4.0	4.5	6.97	3.75 mS			3.00	1.450	clear
10:27	100	4.2	4.4	6.96	3.75 mS			4.22	1.450	clear

Sample Collection Information:

 include bottle requisition form to indicate 'number, type and size of containers filled and 'whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes
WS11-006	10:28	X	X	X					Total metals
WS11-007	~~10:28~~	X	X	X					Total Metals.

Comments:

WS11-007 Duplicate for Kaizen
collected Duplicate for WS11-006 For Maxxam
Did not field filter or acidify samples.

Quality Control:

check (✓)

This form is complete (✓) & legible (✓). Field measurements are within historical values (✓) & stable (✓).
Meters are calibrated (✓) and units shown (✓). Well ID has been confirmed (✓) and well condition documented (✓).
Sample and QC sample IDs recorded (✓), and containers, analyses, field filtering, and preservation indicated (✓).
Any discontinuity in time from the start of purging to date and time of sample collection is documented (✓).

Carlin Pacholko
(completed by)

Kriste Boons
(inspected by)

Aug 31, 2011
(date)

Monitoring Well Sampling Record

Site Name:	PIN-3	
Date of Sampling Event:	August 25, 2011	Time: 15:04
Names of Samplers:	Carlin Pacholko	
Landfill Name:	Non-Hazardous Waste Landfill	
Monitoring Well ID:	NW16	
Sample Number:	WS11-010	
Condition of Well:	Good	
Measured Data		
Well pipe height above ground (cm)=	69	
Diameter of well (cm)=	5	
Depth of well installation (cm)= (from ground surface)	350	
Length screened section (cm)=	200	
Depth to top of screen (cm)= (from ground surface)	50	
Depth to water surface (cm)= (from top of pipe)	98.3	Measurement method: (meter, tape, etc) interface probe
Static water level (cm)= (below ground surface)	~~349.7~~ 29.3	
Measured well refusal depth (cm)= (i.e. depth to frozen ground)	448.0	Evidence of sludge or siltation: No
Thickness of water column (cm)=	349.7	
Static volume of water in well (mL)=	6866.3	
Free product thickness (mm)=	0	Measurement method: (meter, paste, etc) interface probe
Purging: (Y/N)	Y	Purging/Sampling Equipment:
Volume Purged Water=	one well volume	peristaltic pump
Decontamination required: (Y/N)	Y	pH, EC, Temp/DOR probe
Number washes:	1	turbidity meter
Number rinses:	2	
Final pH=	7.24	
Final Conductivity (uS/cm)=	146.7	
Final Temperature (degC)=	6.3	

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DEW LINE MONITORING WELL SAMPLING FORM

Site Name: PIN - 3

Landfill Name: Non-Hazardous Waste Well ID: MW-16

General Information:

Project Name: **Kitik07 DEW Line Monitoring**

Project Number: **A07001A02**

Sampling Date: August 25, 2011

Field Personnel: Carlin Pacholko

Weather: Misty 80C

TOV: 0.0 (ppm)

Activity: (develop, purge, sample)

Purging Equipment: peristaltic pump

Sampling Equipment: peristaltic pump

Sampling Depth: ~398 (mbtoc)

Well Yield: (high, medium, low)

Well Diameter: 5 cm (mm, inch)

Well Stickup: 69 cm (metre, cm, inch, feet)

Initial Water Level: 98.3 (mbtoc) Time: 15:04

Well Refusal Depth: 448.0 (mbtoc)

Product Thickness: 0 (mm, inch) interface probe (meter, paste)

Well Total Depth: 350cm (measured or inferred)

1 Casing Volume: 6866.3 mL (Litres, Imp gal, US gal)

Development and/or Purging Information:

Time	Purge Rate mL/min	Total Vol. Removed (L)	Temp. (°C)	pH (pH units)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (m btoC)	Comments (colour, odour, sediment load, presence of product / films)
15:12	100	0	7.6	7.40	1453			73.34	0.995	~~clear~~ slightly turbid
15:17	100	0.5	6.4	7.28	1480			71.32	0.998	slightly turbid
15:22	100	1.0	6.2	7.26	1488			39.81	0.996	clear
15:27	100	1.5	6.1	7.26	1491			49.29	0.995	clear
15:32	100	2.0	6.2	7.25	1501			47.07	0.995	clear
15:37	100	2.5	6.4	7.25	1490			40.23	0.995	clear
15:42	100	3.0	6.2	7.25	1492			59.42	0.995	clear
15:47	100	3.5	-	-	-			-	-	-
15:52	100	4.0	6.6	7.24	1468			23.03	0.996	clear
15:57	100	4.5	6.3	7.24	1474			15.79	0.996	clear
16:02	100	5.0	6.3	7.24	1476			8.51	0.997	clear

Sample Collection Information: include bottle requisition form to indicate *number, type and size of containers filled and *whether preserved and/or field filtered

Sample ID	Time Collected	Inorganic Elements	PCBs	TPH	Total Purge	Total Extract	Total Phenols	Total Glycols	Notes
WS11-010	16:22	X	X	X					Total Metals

Comments:

Did not field filter or acidify samples

Quality Control:

check (✓)

This form is complete (✓) & legible (✓). Field measurements are within historical values (✓) & stable (✓).
Meters are calibrated (✓) and units shown (✓). Well ID has been confirmed (✓) and well condition documented (✓).
Sample and QC sample IDs recorded (✓), and containers, analyses, field filtering, and preservation indicated (✓).
Any discontinuity in time from the start of purging to date and time of sample collection is documented (✓).

Carlin Pacholko

(completed by)

Risto Beaus

(inspected by)

Aug 31, 2011

(date)

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information

Site Name:	Thermistor Location	
Thermistor Number:	Inclination	
Install Date:	First Date Event	Last Date Event
Coordinates and Elevation	N	E Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points
Datalogger Serial #	Cable Serial Number	

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	(?)	?
Cover	(?)	?
Data Logger	(?)	?
Cable	(?)	?
Beads	(?)	?

Battery Installation Date

August 25, 2011

Battery Levels

Main New-11.34 Old-11.54 Aux New-12.29 Old-12.77V

Manual Ground Temperature Readings

Bead	K ohms	Degrees C
1	10.87	
2	11.90	
3	13.09	
4	14.32	
5	15.78	
6	16.77	
7	18.19	
8	19.32	

Bead	ohms	Degrees C
9	20.27	
10	21.55	
11	22.06	
~~12~~		

Observations and Proposed Maintenance

82% full memory

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information <i>VT-2</i>	
Site Name:	Thermistor Location
Thermistor Number:	Inclination
Install Date:	First Date Event
Coordinates and Elevation	Last Date Event
Length of Cable (m)	Cable Lead Above Ground (m)
Datalogger Serial #	Nodal Points
	Cable Serial Number

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	<i>(?)</i>	<i>?</i>
Cover	<i>(?)</i>	<i>?</i>
Data Logger	<i>(?)</i>	<i>?</i>
Cable	<i>(?)</i>	<i>?</i>
Beads	<i>(?)</i>	<i>?</i>
Battery Installation Date	<i>Aug 25, 2011</i>	
Battery Levels	Main <i>New-11.34 old-11.34</i> Aux <i>New-13.50 old-13.38</i>	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.32	
2	9.39	
3	9.45	
4	8.726	
5	10.36	
6	11.72	
7	12.70	
8	14.26	

Bead	ohms	Degrees C
9	16.09	
10	16.76	
11	17.36	
12	18.05	
13	18.60	
14	19.26	

Observations and Proposed Maintenance

82 % full memory

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information **VT-3**

Site Name:	Thermistor Location		
Thermistor Number:	Inclination		
Install Date:	First Date Event	Last Date Event	
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #	Cable Serial Number		

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	?
Cover	?	?
Data Logger	?	?
Cable	?	?
Beads	?	?
Battery Installation Date	August 25, 2011	
Battery Levels	Main New-11.34v Old-11.34v Aux New-12.41v Old-13.26v	

Manual Ground Temperature Readings

Bead	K ohms	Degrees C
1	10.97	
2	12.04	
3	12.99	
4	14.48	
5	16.09	
6	17.10	
7	18.56	
8	19.57	

Bead	ohms	Degrees C
9	20.79	
10	21.73	
11	22.30	
12		

Observations and Proposed Maintenance

82% full memory

Ground Temperature Annual Maintenance Report

Contractor Name: <u>IEG Nurasi Consultants</u>	Inspection Date: <u>August 25, 2011</u>
Prepared By: <u>Ryan Lennie</u>	

Thermistor Information VT-4

Site Name: <u>VT-4</u>	Thermistor Location	
Thermistor Number: <u> </u>	Inclination	
Install Date:	First Date Event	Last Date Event
Coordinates and Elevation	N	E
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points
Datalogger Serial #	Cable Serial Number	

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	<u>?</u>	<u>?</u>
Cover	<u>?</u>	<u>?</u>
Data Logger	<u>?</u>	<u>?</u>
Cable	<u>?</u>	<u>?</u>
Beads	<u>?</u>	<u>?</u>
Battery Installation Date	<u>August 25, 2011</u>	
Battery Levels	Main <u>New-11.34v old-13.34v</u> Aux <u>New-12.65v old-13.38v</u>	

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.45	
2	8.73	
3	10.92	
4	12.10	
5	13.03	
6	14.35	
7	15.69	
8	16.79	

Bead	ohms	Degrees C
9	17.40	
10	18.28	
11	19.00	
12	19.27	
13		
14		
15		
16		

Observations and Proposed Maintenance

82% full memory
data

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date: August 25, 2011
Prepared By:	

Thermistor Information VT-5

Site Name:	Thermistor Location		
Thermistor Number:	Inclination		
Install Date:	First Date Event	Last Date Event	
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #	Cable Serial Number		

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	?
Cover	?	?
Data Logger	?	? Earth ground screw missing
Cable	?	?
Beads	?	? Bead 10
Battery Installation Date	Aug 25, 2011	
Battery Levels	Main New - 11.34 old - 11.34	Aux New - 12.70 old - 12.77v

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	9.24	
2	8.994	
3	8.736	
4	10.19	
5	11.78	
6	12.85	
7	14.48	
8	17.22	

Bead	ohms	Degrees C
9	18.10	
10	140	
11	19.92	
12	20.63	
13	21.38	
14	22.13	
15	23.20	
16	24.31	

Observations and Proposed Maintenance

Bead 10 has been recording erratically since 2/20/2011
82% full memory

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information VT-6

Site Name:	Thermistor Location	
Thermistor Number:	Inclination	
Install Date:	First Date Event	Last Date Event
Coordinates and Elevation	N	E Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points
Datalogger Serial #	Cable Serial Number	

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	?
Cover	?	?
Data Logger	?	?
Cable	?	?
Beads	?	?
Battery Installation Date	Aug 25, 2011	
Battery Levels	Main New - 11.34 old - 11.34 Aux New - 13.66 old - 13.02	

Manual Ground Temperature Readings

Bead	k ohms	Degrees C
1	9.128	
2	10.77	
3	8.82	
4	10.35	
5	12.06	
6	13.36	
7	15.56	
8	17.49	

Bead	ohms	Degrees C
9	18.21	
10	18.90	
11	19.79	
12	20.67	
13	21.40	
14	22.07	
15	23.29	
16	24.16	

Observations and Proposed Maintenance

82% full

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information

Site Name:	Thermistor Location		
Thermistor Number:	Inclination		
Install Date:	First Date Event	Last Date Event	
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #	Cable Serial Number		

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	? _____
Cover	?	? _____
Data Logger	?	? Earth ground screws missing and stripped hole
Cable	?	? _____
Beads	?	? _____
Battery Installation Date	August 25, 2011	
Battery Levels	Main New -11.34 Old -11.34 V	Aux New -12.70 Old -13.50 V

Manual Ground Temperature Readings

Bead	ohms	Degrees C
1	8.68	
2	9.68	
3	11.57	
4	12.62	
5	13.82	
6	16.31	
7	17.14	
8	17.82	

Bead	ohms	Degrees C
9	18.72	
10	19.60	
11	20.50	
12	21.15	
13	21.82	
14	22.43	
15	22.91	
16	23.13	

Observations and Proposed Maintenance

82% full

Ground Temperature Annual Maintenance Report

Contractor Name:	Inspection Date:
Prepared By:	

Thermistor Information VT-8

Site Name:	Thermistor Location		
Thermistor Number:	Inclination		
Install Date:	First Date Event	Last Date Event	
Coordinates and Elevation	N	E	Elev
Length of Cable (m)	Cable Lead Above Ground (m)	Nodal Points	
Datalogger Serial #	Cable Serial Number		

Code

Thermistor Inspection

	Good	Needs Maintenance
Casing	?	?
Cover	?	?
Data Logger	?	?
Cable	?	?
Beads	?	?
Battery Installation Date	August 25, 2011	
Battery Levels	Main New - 11.34 Old - 11.34V Aux New - 12.65V Old - 13.26V	

Manual Ground Temperature Readings

Bead	K ohms	Degrees C
1	8.415	
2	9.865	
3	11.55	
4	12.43	
5	13.74	
6	16.33	
7	17.37	
8	18.09	

Bead	ohms	Degrees C
9	18.88	
10	19.71	
11	20.52	
12	20.99	
13	22.06	
14	22.57	
15	23.04	
16	23.43	

Observations and Proposed Maintenance

82% Full

333 - 50 Avenue SE, Calgary, Alberta T2G 2B3
Telephone: (403) 297-0868 Fax: (403) 297-0869
e-mail: kaizenlab@kaizenlab.ca

Date Required:

<u>Service</u>	<u>Surcharge</u>	<u>Drilling Waste</u>	<u>Other Services</u>
Regular	None	48 hours	3 - 5 days
Rush	50%	24 hours	48 hours
Priority	100%	12 hours	24 hours
Emergency	200%	Weekends and holidays	

Above TAT are considered for **samples** received before 3pm

[illegible]

Client: **IEG Nungsi**

Contact: Jeff Whitten

Email: lwhitter@klohn.com

Report Address: 500, 2618 Hopedale Place NE, Calgary, AB

Billing Address: 500, 2618 Hopewell Place NE, Calgary, AB

Special Requests:

Did not field filter or acidify samples

Relinquished By: <i>AR</i>	Received By:
Date: <i>11/08/27</i>	Date:
Time: <i>10:00</i>	Time:

LABORATORY USE ONLY Sample Condition Upon Receipt:

Frozen ☐ Cold ☐ Ambient ☐ Temperature:

Head Space: YES NO

Other:

333 - 50 Avenue SE, Calgary, Alberta T2G 2B3
Telephone: (403) 297-0868 Fax: (403) 297-0869
e-mail: kaizenlab@kaizenlab.ca

Date Required:

Service	Surcharge	Drilling Waste	Other Services
Regular	None	48 hours	3 - 5 days
Rush	50%	24 hours	48 hours
Priority	100%	12 hours	24 hours
Emergency	200%	Weekends and holidays	

Above TAT are considered for samples received before 3pm

SAMPLE IDENTIFICATION	LAB ID	DATE SAMPLED	MATRIX	PCB - Total Aroclor	TPH	Arsenic, Cadmium, Chromium, Cobalt, Copper, Lead, Nickel, Zinc, molybdenum													
SS11-001		Aug 24, 2011	Soil	/	/	/	/												
-002				/	/	/	/												
-003				/	/	/	/												
-004				/	/	/	/												
-005				/	/	/	/												
-006				/	/	/	/												
-007				/	/	/	/												
-008				/	/	/	/												
-009				/	/	/	/												
-010				/	/	/	/												
-011				/	/	/	/												
-012				/	/	/	/												
-013				/	/	/	/												
-015				/	/	/	/												
-017				/	/	/	/												
-018				/	/	/	/												
-019				/	/	/	/												

Client: IEG Consultants

Contact: Jeff Whitter

Phone: 867 678-0644

Email: Jwhitter@klohn.com Rennie@klohn.com Fax:

Report Address: 500-2618 Hopewell pl NE Calgary AB T1Y 7J7

Billing Address:

Special Requests:

Relinquished By: Ryan Lennie

Received By:

Date: Aug 27, 2011

Date:

Time: 11:00

Time:

LABORATORY USE ONLY Sample Condition Upon Receipt:

Frozen ☐ Cold ☐ Ambient ☐

Temperature:

Head Space: YES NO

Other:

333 - 50 Avenue SE, Calgary, Alberta T2G 2B3
Telephone: (403) 297-0868 Fax: (403) 297-0869
e-mail: kaizenlab@kaizenlab.ca

Date Required:

Service	Surcharge	Drilling Waste	Other Services
Regular	None	48 hours	3 - 5 days
Rush	50%	24 hours	48 hours
Priority	100%	12 hours	24 hours
Emergency	200%	Weekends and holidays	

Above TAT are considered for samples received before 3pm

SAMPLE IDENTIFICATION		LAB ID	DATE SAMPLED	MATRIX	ANALYSIS REQUESTED									
SS11-020			Aug 24, 2011	Soil										
021														
022														
024														
025														
026														
027														
029														
031														
032														
033														
035														
036														
037														
038														
039														

Client: IE & Consultants

Contact: Jeff Whittier

Email: jwhittier@klchn.com

Report Address:

Billing Address:

Special Requests:

Phone:

Fax:

Relinquished By: Ryan Lennie

Date: Aug 27, 2011

Time: 1100

Received By:

Date:

Time:

LABORATORY USE ONLY Sample Condition Upon Receipt:

Frozen ☐ Cold ☐ Ambient ☐

Head Space: YES NO

Other:

Temperature:

333 - 50 Avenue SE, Calgary, Alberta T2G 2B3
Telephone: (403) 297-0868 Fax: (403) 297-0869
e-mail: kaizenlab@kaizenlab.ca

Date Required:

Kaizen Lab File #

ANALYSIS REQUESTED

Client Job/Project #

Purchase Order #

Service	Surcharge	Drilling Waste	Other Services
Regular	None	48 hours	3 - 5 days
Rush	50%	24 hours	48 hours
Priority	100%	12 hours	24 hours
Emergency	200%	Weekends and holidays	

Above TAT are considered for samples received before 3pm

SAMPLE IDENTIFICATION	LAB ID	DATE SAMPLED	MATRIX	TPH	As, Se, Ni, Co, Ba, H, Cd, Chromium	Chromium	Copper	Lead	Nickel	Zinc	Manganese
SS11-041		Aug 24, 2011	Soil								
042											
044											
045											
047											
048											
049											
050											
051											
052		Aug 25, 2011									
053											
054											
056											
057											
058											
059											

Client: IEC Consultants

Contact:

Phone:

Email: Jwhitter@klohn.com

Fax:

Report Address:

Billing Address:

Special Requests:

Relinquished By: Ryan Leunfu Received By:

Date: Aug 27, 2011

Date:

Time: 11:00

Time:

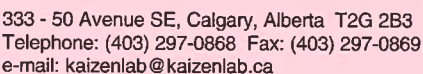
LABORATORY USE ONLY Sample Condition Upon Receipt:

Frozen ☐ Cold ☐ Ambient ☐

Temperature:

Head Space: YES NO

Other:



Kaizen Lab File

ANALYSIS REQUESTED

Client Job/Project #

Purchase Order #

Date Required:

<u>Service</u>	<u>Surcharge</u>	<u>Drilling Waste</u>	<u>Other Services</u>
Regular	None	48 hours	3 - 5 days
Rush	50%	24 hours	48 hours
Priority	100%	12 hours	24 hours
Emergency	200%	Weekends and holidays	

Above TAT are considered for **samples** received before 3pm

[illegible]

Client: JEG Consultants

Contact:

Phone:

Email: JWhitel@Kolan.com

Fax:**Report Address:****Billing Address:**

Special Requests:

Relinquished By: John Lewis

Received By:

Date: Aug 27, 2011

Date:

Time: 14:00

Time:

LABORATORY USE ONLY Sample Condition Upon Receipt:

Frozen ☐ Cold ☐ Ambient ☐

Temperature:

Head Space: YES NO

Other:

All **Bold** fields (Contact Name, Sample Identification, TAT Requested and Analysis Requested) must be completed in order to avoid processing delays.

Company:	Invoice To:	C/O Report Address	☐
Contact:	IEG Nunasi		
Address:	Jeff Whitter		
	500, 2618 Hopewell Place NE		
	Prov:	Calgary, AB	PC: T1Y 7J7
Contact #s:	Ph:	403-274-3424	Cell: -

Report To:	Same as Invoice	☒
Prov:	PC:	
Ph:	Cell:	

Report Distribution (E-Mail):
jwhitter@klohn.com
cpacholko@klohn.com

REGULATORY GUIDELINES:
☐ AT1
☐ CCME
☐ Regulated Drinking Water
☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	A07001A02
Project # / Name:	PIN-3
Site Location:	PIN-3
Quote #:	
Sampled By:	CTP

SERVICE REQUESTED:	☐ RUSH (Contact lab to reserve)
Date Required:	
	☒ REGULAR (5 to 7 Days)

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	BTEX F	Sieve (75µm)	Regulatory Metals	Salinity	Assessment	Basic C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Please indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
GR Carlin Pacholko	11/08/27	10:00
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
Special Instructions:	# of Jars Used & Not Submitted	
Did not field filter or acidify samples. See email for lab codes.		

LAB USE ONLY		
Received By:	Date:	Time:
Lab Comments:	Custody Seal	Temperature
		Ice



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

Edmonton: 9331 - 48 Street, T6B 2R4, Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889

www.maxxamanalytics.com

Chain of Custody

A034058

Page: 1 of 1

Company:	Invoice To:	C/O Report Address	☐
Contact:	IEG Consultants		
Address:	Jeff Whitter		
Contact #s:	Prov:	PC:	
	Ph:	Cell:	

Report To:	Same as Invoice	☒
IEG Consultants		
500 - 2618 Hopedewell Pl NE		
Calgary		
Prov:	AB	PC: T1Y 7J7
Ph:	867 777-8521	Cell: 867 678-0644

Report Distribution (E-Mail):
Stennie @ Kloba.com
JWhitter @ Kloba.com

REGULATORY GUIDELINES:
☐ AT1
☒ CCME
☐ Regulated Drinking Water
☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:
Project # / Name: A07001 A07
Site Location: Lady Franklin
Quote #:
Sampled By: BL

SERVICE REQUESTED:	☐ RUSH (Contact lab to reserve)
	Date Required:
	☒ REGULAR (5 to 7 Days)

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	BTEX F	Sieve (	Regula	Salinity	Asses	Basic (	PCB	TPH	Arsenic	Copper	Lead	Chromium	Vanadium	Zinc	Nickel	Manganese	Mercury	Total	Dissol	Mercuru																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

Please indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print): Ryan Lennie	Date (YY/MM/DD): 11/08/27	Time (24:00): 11:00
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
Special Instructions:	# of Jars Used & Not Submitted	

LAB USE ONLY			
Received By:	Date:	Time:	Maxxam Job #:
Lab Comments:			