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BORING / WELL CONSTRUCTION LOG

BH23

PROJECT NUMBER J1938

DATE 13/05/2002

PROJECT NAME SOPA

BLANK

LOCATION Homebush

SCREEN

DRILLING METHOD Solid-Stem Auger

GRAVEL PACK

SAMPLING METHOD Grab

SANITARY SEAL/BENTONITE

SURFACE ELEVATION

STABILISED WATER LEVEL

WELL HEAD/TOC

GROUND WATER ELEVATION

LOGGED BY R. Casson

COMMENTS Surface cover is bitumen (30mm)

PID (ppm)	BLOW COUNTS	RECOVERY	SAMPLE NUMBER	ANALYSED	DEPTH (m BGL)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
ND			BH23 0.03-0.2	*			Bitumen SAND (crushed sandstone) with gravel (FILL), white/black/brown, loose, slightly moist Silty CLAY with gravel (FILL), brown, soft, low plasticity, moist	0.03 0.30
ND			BH23 0.8-1.0		1			
ND			BH23 1.8-2.0		2		Silty CLAY (CL), yellow/brown, stiff, low plasticity, slightly moist	1.50
ND			BH23 2.5-2.7				Weathered SHALE (BEDROCK), grey/brown, slightly moist, low to high strength	2.20
							Borehole terminated in weathered shale Total Depth: 2.70 m	2.70

APPENDIX B



Data Validation - Appendix B

Site 3, Sydney Olympic Park Town Centre, NSW

Site Contaminated Assessment

The following sections describe components of the Quality Assurance and Control Plan for the Site Contamination Assessment, which complement the measures described in the report. An evaluation of the conformance of the results of the investigation against predetermined data quality objectives (DQOs) is also included.

B1.1 Laboratory Data Quality Objectives

Listed below are the predetermined DQOs defined for the assessment of the laboratory analytical data:

- 
- All sample analyses to be conducted using National Association of Testing Authorities (NATA) registered methods in accordance with ANZECC (1996) and NEPM (1999) guidelines;
 - Maximum acceptable sample holding time is 14 days for organic analyses and 6 months for metal analyses. Mercury (Hg) to be analysed within 28 days of sample collection;
 - Samples were appropriately preserved and handled;
 - Laboratory method blank analyses required to be below the limits of reporting (PQLs);
 - Surrogate compound concentrations required to be spiked at similar concentration to sample results;
 - All PQLs must be less than the assessment criteria;
 - The relative percent difference of replicates will be determined and compared to the following criteria for acceptability. The acceptance criteria are based on both HLA's experience and the criteria listed in AS 4482.1 of 1997:
 - Less than 30 percent for field duplicates and laboratory split samples;
 - Less than 30 percent for laboratory duplicates where the detection is less than 10 times the LOR; and
 - Less than 20 percent for laboratory duplicates where the detection is greater than 10 times the PQL.
 - RPDs for Control Spike Duplicates were compared to an acceptable limit of 20%.
 - RPDs for Matrix Spike Duplicates were compared to an acceptable limit of 20%.
 - Percent recoveries of control spikes and matrix spikes were compared to an acceptable range of 70–130 %. Where this range was exceeded, reference to the laboratories internal DQO limits was made. In addition, percentage recoveries of surrogates were also compared to the USEPA surrogate recovery limits.



In HLA's experience, since samples to be analysed for volatiles cannot be homogenised, the RPD results obtained for duplicate and triplicate samples and repeat analyses will typically not provide an assessment of laboratory precision, but rather an indication of homogeneity of the distribution of the analyte within the sample. Any exceedences of the above acceptable limits were professionally assessed to determine the affect, if any on the overall usability or validity of the field sample data.

Data Validation - Appendix B**Site 3, Sydney Olympic Park Town Centre, NSW****Site Contaminated Assessment****B1.2 Chemical Analysis**

The primary laboratory used for sample analysis was Australian Laboratory Services (ALS) and the secondary laboratory used to analyse triplicate samples was Labmark Laboratory Services (Labmark). Both laboratories are NATA accredited for all analyses conducted. The following table presents a summary of the analytical methods used by the primary laboratory (only) and endorsed by ANZECC (1996):

Primary Laboratory Methods

Analyte	ALS			
	Matrix	Lab Method	Reference Method	Detection Limit (mg/kg)
Metals	Soil	EG-005T	USEPA SW846, 6010	1 - 5
TPH/BTEX	Soil	EP-071-SS EP-080-SS	USEPA 5030, 8260, 8015	TPH 2 - 100 BTEX 0.2 - 0.4
PAH (including BaP)	Soil	EP-076A-SS	USEPA 8270	0.5 - 1
OCPs	Soil	EP-075	USEPA 8270	0.05 - 0.2
Chromium VI	Soil	EG-050	USEPA 8151	1
PCBs	Soil	EP-075	USEPA 8270	0.1
Cyanide	Soil	EK-026	4500 CN-C&N	1



Data Validation - Appendix B

Site 3, Sydney Olympic Park Town Centre, NSW

Site Contaminated Assessment

Laboratory Blanks

Laboratory or control blanks consist of reagents specific to each individual analytical method and are prepared and analysed by laboratories in the same manner as regular samples. The preparation and analysis of laboratory blanks enables the measurement of contamination within the laboratory.

Ideally, no contamination should be present in blanks. However, in the event that contamination is detected, the following actions are taken:

- 
- The organic test results are not to be corrected by subtracting any blank value;
 - If an analyte is found in a blank but not a sample, no action is taken;
 - No absolute results are reported unless the analyte concentration within a sample exceeds 10 times the amount in any blank for common contaminants (dichloromethane, acetone, phthalates, and 2-butanone), or five times the amount for any other analyte; and
 - Professional judgment is used where little or no contamination is present in the associated blanks, but contamination is suspected in actual samples.

Laboratory blanks are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per batch.

Laboratory Duplicates

Laboratory duplicate samples are prepared in the laboratory by splitting a field sample and analysing it as two independent samples. The analysis of laboratory duplicate samples provides an indication of analytical precision and may be influenced by sample heterogeneity. The laboratory duplicate RPDs are used to assess laboratory precision.

Laboratory duplicates are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per batch.



Laboratory Control Samples

Laboratory control samples (LCS) or Quality Control check samples are prepared within the laboratory by spiking an aliquot of an appropriate clean matrix reagent with known concentrations of specific analytes. The check sample is then analysed and the results are used to assess the laboratory performance on sample preparation and analysis procedure. Certified reference material may also be used to assess analytical accuracy independent of the investigations.

Accuracy is assessed by calculation of percent recovery (PR):

$$PR = X / T \times 100\%$$

Where: X is the measured analyte concentration
T is the "true" value

Data Validation - Appendix B

Site 3, Sydney Olympic Park Town Centre, NSW

Site Contaminated Assessment

To evaluate percent recovery, the quality control limits that the laboratories have calculated are assessed following the procedures required by the US EPA. Ideally, all calculated recovery values should be within acceptance limits, which for the case of metals consists of historical analyte recoveries as experienced by the laboratory. However, in the event that control limit outliers are reported, professional judgement is used to assess the extent to which such results may affect the overall useability of the data. LCSs are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per analytical batch.

Matrix Spikes

Matrix spikes are samples prepared within the laboratory by dividing a field sample into two aliquots, then spiking each with identical concentrations of the analytes. The matrix spike, and matrix spike duplicate, are then analysed separately and the results compared to determine the effects of the sample matrix on the accuracy and precision of the analytes. Accuracy is assessed by the calculation of the percent recovery (PR) for matrix spikes:

$$PR = \frac{(SSR - SR)}{SA} \times 100\%$$

Where: SSR is the spiked sample result
SR is the sample result
SA is the spike added

Note that when the sample concentration is less than the instrument detection level, then a value of SR = 0 is recommended.

Surrogates

Surrogates are compounds which are similar to the organic analytes of interest in chemical composition, extraction, and chromatography, but which are not normally found in field samples. Surrogates are generally spiked into all sample aliquots prior to preparation and analysis. Percent recoveries are calculated for each surrogate, providing an indication of analytical accuracy. US EPA methodology (SW - 846) requires that surrogate testing be performed whenever analysing by Gas Chromatography or HPLC.

In order to compare analytical accuracy, it is usually necessary to spike a range of surrogate compounds of different chemical properties into each sample aliquot.



Data Validation - Appendix B

Site 3, Sydney Olympic Park Town Centre, NSW

Site Contaminated Assessment

USEPA Method 8000 (7) provides that the laboratory may calculate its own surrogate recovery limit should the EPA not specify a limit. In the absence of specified PR criteria for individual surrogates or laboratory calculated control limit, the general acceptance criteria for quality control measurements employed were taken from USEPA guidelines (5) which are summarised below:

< 10%	Unacceptable low recovery which may result in negative detections.
10% to 25%	Recoveries are sufficiently low that results provide only an estimate of analyte concentration.
25% to 130%	Acceptable recovery.
> 130%	Unacceptable high recovery which may result in false high detections.



Ideally, all calculated surrogate recovery values should be within acceptable limits. In the event that some recoveries lie outside the control limits, the USEPA guidance documents provide criteria for surrogate recovery results to assign a level of confidence in the results of actual sample analyses. USEPA protocols identify the need to test a minimum of three surrogates for each analytical group.

C2.0 DATA VALIDATION

The overall assessment of the quality of the data obtained during the investigation is discussed below in terms of the following data quality indicators.



B2.1 Precision

Precision – or variability of the data was assessed by determining RPDs between the original and duplicated analyses. Two field duplicate soil samples (DUP01 and DUP02) were sent to the primary laboratory (ALS) and were variably analysed for heavy metals, cyanide, TPH, BTEX, OCPs and PCBs. One field duplicate sample (BH06_0-0.3Lab) was sent to the secondary laboratory (Labmark) and was analysed for metals (only).



RPDs were calculated for all analytes for all original and duplicate samples, the results of which are included in the analytical summary Tables 6 to 8.

The RPDs for TPH, BTEX, OCPs and PCBs were unable to be calculated as results were below laboratory practical quantitation Limits (PQLs) and as such the precision of the laboratory results is considered adequate. The following details instances where the RPD values exceed the predetermined DQOs.

RPDS – Metals (Soils) – Table 6

RPDs for metals in soils generally adhere to the DQOs outlined above, except for the following instances:

- *BH01_0.9-1.0, DUP01*: calculated RPDs for arsenic exceed 30%. The apparent discrepancies are ascribed to low detected analyte concentrations and inherent difficulty in accurately splitting the heterogenous fill material. The concentrations for arsenic were well below adopted site investigation criteria and in the same magnitude of order.
- *BH06_0-0.3 and BH06_0-0.3Lab*: Lead and Arsenic RPDs exceed the adopted project DQOs. The high RPDs are attributable to the same reasons as given above.

The laboratory precision is considered adequate as all concentrations reported are below pertinent soil evaluation criteria and all RPDs for laboratory duplicate analyses were less than the DQOs.

B2.2 Accuracy

The laboratory QA/QC results indicated:

- All method blank samples were reported at less than laboratory PQLs.
- Laboratory PQLs were less than the assessment criteria, except for BaP for Inert Waste Classification.
- Samples were extracted and analysed within acceptable holding times.
- Surrogate compound concentrations were similar to sample result concentrations.

All matrix spike recoveries and surrogate spike recoveries were within acceptable DQO range of 70% to 130%.

Laboratory QA/QC results were included with the laboratory certificates. The laboratory QA/QC assessment results are provided below:

The accuracy of the data obtained from both laboratories is considered to be sufficient for the purposes of the investigation.

B2.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of parameter variations at sampling points or environmental conditions. Sample representativeness is controlled through selecting sampling locations that exemplify site conditions and obtaining suitable samples from these sites. Sampling rationale is discussed in the body of the report.

Sample selection and analysis was conducted in order to meet the specific objectives of the particular phase of work, specifically assess any imported fill material. Analysis for the contaminants of concern was selectively conducted on soil as indicated in analytical summary tables. Based on the sampling and analytical regime undertaken, the results obtained are considered to be sufficiently representative of the subsurface conditions at the site.

B2.4 Comparability

Comparability expresses the confidence with which one data set can be compared with another. In order to assess comparability, field sampling procedures, laboratory sample preparation procedures, analytical procedures, and reporting units must be known and similar to established protocols, as was the case during this investigation. Qualitatively, data subjected to strict QA/QC procedures will be deemed more reliable, and therefore more comparable, than other data. This investigation involved only one day of soil subsurface field investigation as such the data collected is intrinsically comparable. Furthermore all of the field investigation was undertaken by the same Environmental Scientist and all of the laboratory analysis was conducted by the same laboratories, confirming good comparability of subsurface investigation.

B2.5 Completeness

The completeness of data is defined as the percentage of analytical results that are considered valid. Valid chemical data are values that have been identified as acceptable or acceptable as qualified during the data validation process. The completeness is a comparison of the total number of samples accepted against the total number of samples, calculated as a percentage. The project goal for completeness is 90%. Completeness also includes checking that all entries in the database are correct, properly entered, and that any typographical errors in the database are corrected and the data are re-entered properly. Completeness is defined as:

$$\text{Completeness} = \frac{\text{number of acceptable items}}{\text{total number of items}} \times 100\%$$

All samples collected and analysed complied with the predetermined DQOs as such the data obtained is considered to be 100% quantitative and complete.

B2.6 Overall Assessment

Based on an assessment of field and laboratory QA/QC data, the reported analytical results are considered to be valid and representative of concentrations of the analysed compounds at the sample locations tested.

APPENDIX C

##: Rachael Lasson

SAMPLE RECEIPT ADVICE INFORMATION

(This form is to be used conjunction with Costing Worksheet SYFM 57)

ES33505

Due Date:

21/5/02

Australian Laboratory Services has received samples pertaining to your **Reference Number** (see over page):

- ☒ All samples and paper work were received in good order.
- ☐ Paperwork **not received yet**. Please advise us of your requirements.
- ☐ Paperwork **incomplete and ambiguous**. Please contact us to provide further details.
- ☐ Samples were **damaged** during transit. Please contact us.
- ☒ Samples have been received within recommended holding times.
- ☐ Breaches in recommended extraction/analysis holding times may occur. See comments section for details.
- ☐ Please contact us.
- ☐ Samples received **do not match** samples detailed on your submission sheet. See below for details.
- ☒ Samples **chilled** when received.
- ☐ Samples **at ambient temperature** when received.
- ☒ Samples received in **appropriately pre-treated and preserved containers**.
- ☐ Sample containers **do not comply to pre-treatment/preservation standards** (AS,APHA,USEPA)
- ☐ Samples requiring volatile organic compound analysis received in **airtight** containers (ZHE)
- ☐ Volatile organic compound analysis may be compromised as sample vials **contained headspace**.
- ☐ Please direct any turnaround/technical queries to (MM) INSERT LAB MANAGERS NAME. Any queries relating to sample condition/numbering/breakage should be directed to WS
- ☐ Recommended holding times **exceeded** during transit. Please contact us.
- ☐ Analytical work for this batch will be conducted at **ALS Brisbane**.
- ☒ Analytical work for this batch will be conducted at **ALS Sydney**.
- ☐ Analytical work for this batch will be conducted at **ALS Melbourne**.
- ☐ Analytical work for this batch will be **subcontracted** to _____
- ☒ All aqueous samples are **stored** for 2 weeks and solid samples for three months from the date of completion of the batch, unless specific arrangements are made otherwise.
- ☐ **COMMENTS**

Completed by _____ Date _____

SYFM (TAB)



CERTIFICATE OF ANALYSIS

CONTACT: MS RACHAEL CASSON
CLIENT: HLA-ENVIROSCIENCES PTY LTD
ADDRESS:

P O BOX 726
PYMBLE NSW 2073

ORDER No.: 119255
PROJECT: J1938/1-HOMEBUSH

BATCH: ES33505
SUB BATCH: 0
LABORATORY: SYDNEY
DATE RECEIVED: 14/05/2002
DATE COMPLETED: 23/05/2002
SAMPLE TYPE: SOIL
No. of SAMPLES: 27

COMMENTS

Samples as received digested by USEPA method 200.2 (mod) prior to the determination of metals. Results reported on a dry weight basis.
Manganese spike recovery for samples BH01 and BH20 not determined due to background levels of this analyte. LOR's raised for sample BH02_0-0.2 due to high moisture content (>50%). All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of Potentially Contaminated Soil (December 1999). This report supersedes any previous preliminary reports of the same batch number.

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: michael.heery@alsenviro.com

Signatory

LABORATORIES

AUSTRALASIA

Brisbane
Melbourne
Sydney
Newcastle
Auckland

Hong Kong
Singapore
Kuala Lumpur
Bogor
Mumbai

AMERICAS

Vancouver
Santiago
Antofagasta
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



Sub Batch:

Date of

23/05/2002

Client:

HLA-ENVIROSCIENCES PTY LTD

Client Reference:

J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



METHOD	ANALYSIS DESCRIPTION	Laboratory I.D.		SAMPLE IDENTIFICATION									
		UNIT	LOR	1	2	3	4	5	6	7	8	9	10
EA-055	Moisture Content (dried @ 103°C)	%	0.1	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002
EG-005T	Arsenic - Total	mg/kg	1	BH01_	BH02_	BH03_	BH04_	BH05_	BH06_	BH07_	BH08_	BH09_	BH10_
EG-005T	Beryllium - Total	mg/kg	1	0.9-1.0	0-0.2	1.8-2.0	0.4-0.5	0.4-0.5	0-0.3	0.9-1.0	0.9-1.0	2.8-3.0	1.8-2.0
EG-005T	Cadmium - Total	mg/kg	1	6.9	52.0	31.1	27.4	7.2	10.4	12.3	16.4	25.4	13.9
EG-005T	Chromium - Total	mg/kg	1	3	11	6	13	4	7	8	14	10	4
EG-005T	Chromium - Total	mg/kg	1	<1	<2	1	<1	<1	<1	<1	<1	<1	<1
EG-005T	Copper - Total	mg/kg	1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1
EG-005T	Manganese - Total	mg/kg	1	137	23	10	17	8	14	7	31	20	7
EG-005T	Nickel - Total	mg/kg	1	49	76	33	19	40	40	23	14	18	14
EG-005T	Lead - Total	mg/kg	1	851	1180	769	6	287	386	161	301	11	294
EG-005T	Lead - Total	mg/kg	1	124	52	16	<1	26	21	3	10	2	9
EG-005T	Zinc - Total	mg/kg	1	5	64	35	16	13	33	12	35	20	15
EG-035T	Mercury - Total	mg/kg	1	62	123	79	7	44	54	29	23	8	45
EK-031A	Total Cyanide	mg/kg	0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EP-035	Phenols	mg/kg	2	<1	---	---	---	---	---	<1	---	---	---
		mg/kg		---	---	---	---	<2	---	---	<2	---	---

Batch:

ES33505

Sub Batch:

0

Date of Issue:

23/05/2002

Client:

HLA-ENVIROSCIENCES PTY LTD

Client Reference:

J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



METHOD	ANALYSIS DESCRIPTION	Laboratory I.D.		SAMPLE IDENTIFICATION									
		Date Sampled		11	12	13	14	15	16	17	18	19	20
		UNIT	LOR	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002	13/05/2002
EA-055	Moisture Content (dried @ 103°C)	%	0.1	16.5	5.3	18.2	4.8	14.9	11.6	11.1	10.1	8.6	16.1
EG-005T	Arsenic - Total	mg/kg	1	3	4	4	3	59	5	5	3	3	2
EG-005T	Beryllium - Total	mg/kg	1	1	2	<1	<1	<1	<1	<1	1	<1	<1
EG-005T	Cadmium - Total	mg/kg	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
EG-005T	Chromium - Total	mg/kg	1	4	4	7	7	17	15	11	4	4	6
EG-005T	Copper - Total	mg/kg	1	29	22	12	70	64	63	20	35	27	21
EG-005T	Manganese - Total	mg/kg	1	58	918	21	321	252	333	75	708	32	159
EG-005T	Nickel - Total	mg/kg	1	6	24	<1	27	8	13	2	15	3	4
EG-005T	Lead - Total	mg/kg	1	59	13	18	13	39	30	11	15	13	13
EG-005T	Zinc - Total	mg/kg	1	48	100	3	36	41	61	28	75	34	29
EG-035T	Mercury - Total	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.1	<0.1
EK-031A	Total Cyanide	mg/kg	1	---	---	---	---	<1	---	---	---	---	---
EP-035	Phenols	mg/kg	2	<2	---	---	---	<2	---	---	---	---	---



CERTIFICATE OF ANALYSIS



Sub B
Date of Report: 23/05/2002
Client: HLA-ENVIROSCIENCES PTY LTD
Client Reference: J1938/1-HOMEBUSH

METHOD	ANALYSIS DESCRIPTION	Laboratory I.D.		SAMPLE IDENTIFICATION						
		Date Sampled	LOR	21	22	23	24	25	26	27
		UNIT		BH20_	BH21_	BH22_	BH23_	BH23_	DUP01	DUP02
EA-055	Moisture Content (dried @ 103°C)	%	0.1	12.6	15.1	14.7	6.8	20.4	5.7	7.7
EG-005T	Arsenic - Total	mg/kg	1	5	6	3	1	---	2	4
EG-005T	Beryllium - Total	mg/kg	1	1	<1	<1	<1	---	<1	<1
EG-005T	Cadmium - Total	mg/kg	1	<1	<1	<1	<1	---	<1	<1
EG-005T	Chromium - Total	mg/kg	1	9	12	4	5	---	184	9
EG-005T	Copper - Total	mg/kg	1	24	29	20	14	---	47	35
EG-005T	Manganese - Total	mg/kg	1	526	311	76	51	---	945	401
EG-005T	Nickel - Total	mg/kg	1	14	7	4	5	---	130	37
EG-005T	Lead - Total	mg/kg	1	29	30	13	10	---	4	18
EG-005T	Zinc - Total	mg/kg	1	81	54	27	17	---	56	61
EG-035T	Mercury - Total	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	---	<0.1	<0.1
EK-031A	Total Cyanide	mg/kg	1	---	---	---	---	<1	<1	---
EP-035	Phenols	mg/kg	2	---	---	---	<2	---	---	---

Batch: ES33305

Sub Batch: 0

Date of Issue: 23/05/2002

Client: HLA-ENVIROSCIENCES PTY LTD

Client Reference: J1938/1-HOMEBUSH

QUALITY CONTROL REPORT



METHOD		ANALYSIS DESCRIPTION	Laboratory I.D.		SAMPLE IDENTIFICATION										
			Date Sampled	LOR	1	1	11	11	21	21	200	201	202	205	
			UNIT		13/05/2002 BH01_0.9- 1.0_MS	13/05/2002 BH01_0.8- 1.0_CHK	13/05/2002 BH11_3.8- 4.0_MS	13/05/2002 BH11_3.8- 4.0_CHK	13/05/2002 BH20_0.1- 0.3_MS	13/05/2002 BH20_0.1- 0.3_CHK	14/05/2002 METHOD BLANK1	14/05/2002 LCS1	14/05/2002 MS1	14/05/2002 METHOD BLANK2	
			CHECKS AND SPIKES												
EA-055		Moisture Content (dried @ 103°C)	%	0.1	----	17.4	----	18.7	----	13.5	----	----	----	----	----
EG-005T		Arsenic - Total	mg/kg	1	94.0%	16	90.0%	3	75.0%	5	<1	96.0%	90.0%	<1	<1
EG-005T		Beryllium - Total	mg/kg	1	91.0%	<1	92.0%	1	84.0%	1	<1	----	92.0%	<1	<1
EG-005T		Cadmium - Total	mg/kg	1	84.0%	<1	94.0%	<1	84.0%	<1	<1	98.0%	94.0%	<1	<1
EG-005T		Chromium - Total	mg/kg	1	82.0%	156	93.0%	4	85.0%	11	<1	105%	93.0%	<1	<1
EG-005T		Copper - Total	mg/kg	1	88.0%	55	97.0%	32	82.0%	25	<1	110%	97.0%	<1	<1
EG-005T		Manganese - Total	mg/kg	1	Not Det'd	977	107%	58	Not Det'd	411	<1	----	107%	<1	<1
EG-005T		Nickel - Total	mg/kg	1	77.0%	149	91.0%	5	74.0%	10	<1	107%	91.0%	<1	<1
EG-005T		Lead - Total	mg/kg	1	86.0%	7	88.0%	44	70.0%	27	<1	106%	86.0%	<1	<1
EG-005T		Zinc - Total	mg/kg	1	71.0%	78	82.0%	44	88.0%	62	<1	111%	82.0%	<1	<1
EG-035T		Mercury - Total	mg/kg	0.1	124%	<0.1	109%	<0.1	115%	<0.1	<0.1	99.0%	----	<0.1	<0.1
EK-031A		Total Cyanide	mg/kg	1	----	----	----	----	----	----	<1	100%	109%	----	----
EP-035		Phenols	mg/kg	2	----	----	----	----	----	----	<2	91.0%	90.0%	<2	<2

Batch: ES33505
 Sub Batch: 0
 Date of Issue: 23/05/2002
 Client: HLA-ENVIROSCIENCES PTY LTD
 Client Reference: J1938/1-HOMEBUSH

QUALITY CONTROL REPORT



METHOD	ANALYSIS DESCRIPTION	Laboratory I.D.		SAMPLE IDENTIFICATION															
		Date Sampled	LOR	UNIT	LOR	206	14/05/2002	LCS2											
				CHECKS AND SPIKES															
EA-055	Moisture Content (dried @ 103°C)	%	0.1																
EG-005T	Arsenic - Total	mg/kg	1																
EG-005T	Baryllium - Total	mg/kg	1																
EG-005T	Cadmium - Total	mg/kg	1																
EG-005T	Chromium - Total	mg/kg	1																
EG-005T	Copper - Total	mg/kg	1																
EG-005T	Manganese - Total	mg/kg	1																
EG-005T	Nickel - Total	mg/kg	1																
EG-005T	Lead - Total	mg/kg	1																
EG-005T	Zinc - Total	mg/kg	1																
EG-035T	Mercury - Total	mg/kg	0.1																
EK-031A	Total Cyanide	mg/kg	1																
EP-035	Phenols	mg/kg	2																

CERTIFICATE OF ANALYSIS

ORDER No.:	119255	No. of SAMPLES:	6
CONTACT:	MS RACHAEL CASSON	BATCH:	ES333505
CLIENT:	HLA-ENVIROSCIENCES PTY LTD	SUB BATCH:	1
ADDRESS:	P O BOX 726 Pymble NSW 2073	LABORATORY:	SYDNEY
		DATE RECEIVED:	14/05/2002
		DATE COMPLETED:	23/05/2002
		SAMPLE TYPE:	SOIL

COMMENTS

samples analysed on an as received basis. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of

~~Potentially Contaminated Soil (December 1999).~~

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: michael.heery@alsenviro.com

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Significance

LABORATORIES
AUSTRALAS

AMERICAS
Vancouver
Santiago
Antofagasta
Lima

Hong Kong
Singapore
Kuala Lumpur
Bogor
Mumbai

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

Alan Laboratory Services Pty Ltd (ABN 84 009 936 029)

81601 ON
NATA

[illegible]

Batch: ES33505
 Sub Batch: 1
 Date of Issue: 23/05/2002
 Client: HLA-ENVIROSCIENCES PTY LTD
 Client Reference: J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | |
|------------|------------------------------------|-----------------|-------|-----------------------|---------------|---------------|-------------|---------------|----------------|-------|--|
| | | Date Sampled | UNIT | LOR | 1 | 5 | 14 | 17 | 24 | 26 | |
| EA-055 | Moisture Content (dried @ 103°C) | 13/05/2002 | % | 0.1 | BH01_ 0.8-1.0 | BH05_ 0.4-0.5 | BH14_ 0-0.2 | BH17_ 0.8-0.9 | BH23_ 0.03-0.2 | DUP01 | |
| EP-066 SS | Total Polychlorinated biphenyls | | mg/kg | 0.1 | 6.9 | 7.2 | 4.8 | 11.1 | 6.8 | 5.7 | |
| EP-066S-SS | POLYCHLORINATED BIPHENYL SURROGATE | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | |
| EP-066S-SS | Decachlorobiphenyl | | % | 1 | 81 | 89 | 81 | 73 | 77 | 79 | |

Batch: ES33505
Sample: 1
Date of Issue: 23/05/2002



Client: HLA-ENVIROSCIENCES PTY LTD
Client Reference: J1938/1-HOMEBUSH

QUALITY CONTROL REPORT



| | | | | SAMPLE IDENTIFICATION | | | | | | | | | |
|-------------------|------------------------------------|-----------------|--------------|-----------------------|------------|------------|------------|------------|--|--|--|--|--|
| METHOD | ANALYSIS DESCRIPTION | UNIT | | LOR | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | Laboratory I.D. | Date Sampled | 100 | 101 | 102 | 103 | 104 | | | | | |
| | | | | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | | | | | |
| | | | | METHOD | NPCBS482 | NPCBS482 | NPCBS482 | NPCBS482 | | | | | |
| | | | | BLANK | SCS | DCS | MS | MSD | | | | | |
| CHECKS AND SPIKES | | | | | | | | | | | | | |
| EA-055 | Moisture Content (added @ 103°C) | % | 0.1 | --- | --- | --- | --- | --- | | | | | |
| EP-066-SS | Total Polychlorinated biphenyls | mg/kg | 0.1 | <0.1 | 81.0% | 80.0% | 80.0% | 73.0% | | | | | |
| EP-066S-SS | POLYCHLORINATED BIPHENYL SURROGATE | % | 1 | 100 | 98 | 100 | 106 | 99 | | | | | |
| EP-066S-SS | Decachlorobiphenyl | % | 1 | 100 | 98 | 100 | 106 | 99 | | | | | |

CERTIFICATE OF ANALYSIS

| | | | |
|------------|----------------------------|-----------------|------------|
| CONTACT: | MS RACHAEL CASSON | BATCH: | ES33505 |
| CLIENT: | HLA-ENVIROSCIENCES PTY LTD | SUB BATCH: | 2 |
| ADDRESS: | P O BOX 726 | LABORATORY: | SYDNEY |
| | PYMBLE NSW 2073 | DATE RECEIVED: | 14/05/2002 |
| ORDER No.: | 119255 | DATE COMPLETED: | 23/05/2002 |
| PROJECT: | J1938/1-HOMEBUSH | SAMPLE TYPE: | SOIL |
| | | No. of SAMPLES: | 6 |

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of Potentially Contaminated Soil (December 1999).

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
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SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
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Signature

LABORATORIES

AUSTRALASIA

Perth
Melbourne
Sydney
Newcastle
Auckland
Mumbai

AMERICAS

Vancouver
Santiago
Antofagasta
Lima



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The results reported herein have been performed in accordance with the terms of accreditation. This document shall not be reproduced, except in full.

Batch:
Sample:
Date of Issue:

ES333605
2
23/05/2002

Client:
Client Reference:

HLA-ENVIROSCIENCES PTY LTD
J1938/1-HOMEBUSH



CERTIFICATE OF ANALYSIS



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | |
|------------|------------------------------------|-----------------|------|-----------------------|-------|-------|-------|-------|-------|--|--|
| | | UNIT | LOR | 1 | 5 | 14 | 17 | 24 | 26 | | |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | 6.9 | 7.2 | 4.8 | 11.1 | 8.8 | 5.7 | | |
| EP-068A-SS | ORGANOCHLORINE PESTICIDES | | | | | | | | | | |
| EP-068A-SS | alpha-BHC | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | HCB | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | beta-BHC & gamma-BHC | mg/kg | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | |
| EP-068A-SS | delta-BHC | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Heptachlor | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Aldrin | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Heptachlor epoxide | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Chlordane - trans | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Endosulfan 1 | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Chlordane - cis | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Dieldrin | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | DDE | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Endrin | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Endosulfan 2 | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | DDD | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Endrin aldehyde | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Endosulfan sulfate | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | DDT | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | | |
| EP-068A-SS | Endrin ketone | mg/kg | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | |
| EP-068A-SS | Methoxychlor | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | | |
| EP-068S-SS | ORGANOCHLORINE PESTICIDE SURROGATE | % | 1 | 106 | 102 | 103 | 103 | 100 | 97 | | |
| EP-068S-SS | Dibromo-DDE | % | 1 | 106 | 102 | 103 | 103 | 100 | 97 | | |

Batch: ES33505
Sub Batch: 2
Date of Issue: 23/05/2002

Client: HLA-ENVIROSCIENCES PTY LTD
Client Reference: J1938/1-HOMEBUSH

QUALITY CONTROL REPORT



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | | | | | | |
|-------------------|------------------------------------|-----------------|------|-----------------------|------------|------------|------------|------------|-----|--|--|--|--|--|--|--|
| | | UNIT | LOR | Date Sampled | | | | | | | | | | | | |
| | | | | 100 | 101 | 102 | 103 | 104 | | | | | | | | |
| | | | | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | | | | | | | | |
| | | METHOD | | BLANK | NOCOPS1089 | NOCOPS1089 | NOCOPS1089 | NOCOPS1089 | MSD | | | | | | | |
| CHECKS AND SPIKES | | | | | | | | | | | | | | | | |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | --- | --- | --- | --- | --- | --- | | | | | | | |
| EP-068A-SS | ORGANOCHLORINE PESTICIDES | | | | | | | | | | | | | | | |
| EP-068A-SS | alpha-BHC | mg/kg | 0.05 | <0.05 | 84.0% | 80.3% | --- | --- | --- | | | | | | | |
| EP-068A-SS | gamma-BHC | mg/kg | 0.05 | <0.05 | 79.1% | 95.1% | --- | --- | --- | | | | | | | |
| EP-068A-SS | delta-BHC & gamma-BHC | mg/kg | 0.1 | <0.1 | 89.1% | 95.8% | 93.6% | 95.7% | --- | | | | | | | |
| EP-068A-SS | delta-BHC | mg/kg | 0.05 | <0.05 | 95.0% | 97.6% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Heptachlor | mg/kg | 0.05 | <0.05 | 84.5% | 92.4% | 80.0% | 78.2% | --- | | | | | | | |
| EP-068A-SS | Aldrin | mg/kg | 0.05 | <0.05 | 95.5% | 92.8% | 80.7% | 80.3% | --- | | | | | | | |
| EP-068A-SS | Heptachlor epoxide | mg/kg | 0.05 | <0.05 | 82.6% | 94.0% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Chlordane - trans | mg/kg | 0.05 | <0.05 | 88.1% | 91.6% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Chlordane - cis | mg/kg | 0.05 | <0.05 | 81.7% | 90.5% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Endosulfan 1 | mg/kg | 0.05 | <0.05 | 88.6% | 92.1% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Dieldrin | mg/kg | 0.05 | <0.05 | 82.5% | 80.4% | 87.9% | 91.4% | --- | | | | | | | |
| EP-068A-SS | DDE | mg/kg | 0.05 | <0.05 | 80.8% | 93.0% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Endrin | mg/kg | 0.05 | <0.05 | 82.9% | 92.6% | 79.5% | 74.1% | --- | | | | | | | |
| EP-068A-SS | Endosulfan 2 | mg/kg | 0.05 | <0.05 | 81.6% | 93.6% | --- | --- | --- | | | | | | | |
| EP-068A-SS | DDD | mg/kg | 0.05 | <0.05 | 80.7% | 92.4% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Endrin aldehyde | mg/kg | 0.05 | <0.05 | 91.8% | 94.8% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Endosulfan sulfate | mg/kg | 0.05 | <0.05 | 94.3% | 93.0% | --- | --- | --- | | | | | | | |
| EP-068A-SS | DDT | mg/kg | 0.2 | <0.2 | 87.1% | 93.9% | 72.0% | 69.4% | --- | | | | | | | |
| EP-068A-SS | Endrin ketone | mg/kg | 0.05 | <0.05 | 86.1% | 91.4% | --- | --- | --- | | | | | | | |
| EP-068A-SS | Methoxychlor | mg/kg | 0.2 | <0.2 | 84.4% | 84.0% | --- | --- | --- | | | | | | | |
| EP-068S-SS | ORGANOCHLORINE PESTICIDE SURROGATE | | | | | | | | | | | | | | | |
| EP-068S-SS | Dibromo-DDE | % | 1 | 83 | 87 | 85 | 98 | 96 | | | | | | | | |



CERTIFICATE OF ANALYSIS

CONTACT: MS RACHAEL CASSON
CLIENT: HLA-ENVIROSCIENCES PTY LTD
ADDRESS: P O BOX 726
PYMBLE NSW 2073
ORDER No.: 119255
PROJECT: J1938/1-HOMEBUSH

BATCH: ES33505
SUB BATCH: 3
LABORATORY: SYDNEY
DATE RECEIVED: 14/05/2002
DATE COMPLETED: 23/05/2002
SAMPLE TYPE: SOIL
No. of SAMPLES: 7

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of Potentially Contaminated Soil (December 1999).

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

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SMITHFIELD NSW 2164

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Signatory 

LABORATORIES

AUSTRALASIA

Melbourne
Sydney
Newcastle
Auckland
Hong Kong
Singapore
Kuala Lumpur
Bogor
Mumbai

AMERICAS

Vancouver
Santiago
Antofagasta
Lima

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Batch: ES33505

Sub Batch: 3

Date of Issue: 23/05/2002

Client: HLA-ENVIROSCIENCES PTY LTD

Client Reference: J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | | | |
|------------|---------------------------------------|-----------------|-----|-----------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | UNIT | LOR | Date Sampled | | 1 | | 3 | | 10 | | 14 | |
| | | | | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | BH01_ | BH03_ | BH10_ | BH14_ | BH23_ | BH23_ | BH23_ | DUP01 | | |
| EP-071-SS | TOTAL PETROLEUM HYDROCARBONS | | | 0.9-1.0 | 1.8-2.0 | 1.8-2.0 | 0-0.2 | 0.03-0.2 | 1.8-2.0 | | | | |
| EP-071-SS | C6 - C9 Fraction | mg/kg | 2 | 6.9 | 31.1 | 13.9 | 4.8 | 8.8 | 20.4 | | | | |
| EP-071-SS | C10 - C14 Fraction | mg/kg | 50 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| EP-071-SS | C15 - C28 Fraction | mg/kg | 100 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| EP-071-SS | C29 - C36 Fraction | mg/kg | 100 | <100 | <100 | <100 | <100 | 122 | <100 | <100 | <100 | <100 | <100 |
| EP-080-SS | BTEX | mg/kg | | <100 | <100 | <100 | <100 | 474 | <100 | <100 | <100 | <100 | <100 |
| EP-080-SS | Benzene | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080-SS | Toluene | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080-SS | Chlorobenzene | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080-SS | Ethylbenzene | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080-SS | meta- & para-Xylene | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080-SS | ortho-Xylene | mg/kg | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080S-SS | VOLATILE TPH/BTEX COMPOUND SURROGATES | | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| EP-080S-SS | 1,2-Dichloroethane-D4 | % | 1 | 93 | 91 | 108 | 96 | 97 | 93 | 89 | | | |
| EP-080S-SS | Toluene-D8 | % | 1 | 98 | 94 | 103 | 105 | 102 | 100 | 97 | | | |
| EP-080S-SS | 4-Bromofluorobenzene | % | 1 | 109 | 106 | 99 | 107 | 110 | 109 | 105 | | | |

Batch:

ES33606

Sub:

3

Date of Issue:

23/05/2002

Client:

HLA-ENVIROSCIENCES PTY LTD

Client Reference:

J1938/1-HOMEBUSH

QUALITY CONTROL REPORT



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | |
|--------|----------------------|-----------------|-----|-----------------------|-----------|-----------|-----------|-----------|--|
| | | Date Sampled | LOR | 100 | 101 | 102 | 103 | 104 | |
| | | 14/05/2002 | | METHOD | NTPHT3280 | NTPHT3280 | NTPHT3280 | NTPHT3280 | |
| | | | | BLANK | SCS | DCS | MS | MSD | |

CHECKS AND SPIKES

| | Moisture Content (dried @ 103°C) | % | 0.1 | --- | --- | --- | --- | --- | | | | | |
|------------|---------------------------------------|-------|-----|------|-------|-------|-------|-------|--|--|--|--|--|
| EA-055 | TOTAL PETROLEUM HYDROCARBONS | | | | | | | | | | | | |
| EP-071-SS | C6 - C9 Fraction | mg/kg | 2 | <2 | 92.0% | 95.0% | 93.0% | 91.0% | | | | | |
| EP-071-SS | C10 - C14 Fraction | mg/kg | 50 | <50 | 108% | 109% | 98.0% | 105% | | | | | |
| EP-071-SS | C15 - C28 Fraction | mg/kg | 100 | <100 | 108% | 107% | 80.0% | 81.0% | | | | | |
| EP-071-SS | C29 - C36 Fraction | mg/kg | 100 | <100 | 110% | 108% | --- | --- | | | | | |
| EP-080-SS | BTEX | | | | | | | | | | | | |
| EP-080-SS | Benzene | mg/kg | 0.2 | <0.2 | 88.0% | 94.0% | 86.0% | 88.0% | | | | | |
| EP-080-SS | Toluene | mg/kg | 0.2 | <0.2 | 87.0% | 92.0% | 69.0% | 71.0% | | | | | |
| EP-080-SS | Chlorobenzene | mg/kg | 0.2 | <0.2 | 96.0% | 92.0% | 98.0% | 101% | | | | | |
| EP-080-SS | Ethylbenzene | mg/kg | 0.2 | <0.2 | 92.0% | 93.0% | --- | --- | | | | | |
| EP-080-SS | mela- & para-Xylene | mg/kg | 0.2 | <0.2 | 91.0% | 90.0% | --- | --- | | | | | |
| EP-080-SS | ortho-Xylene | mg/kg | 0.2 | <0.2 | 94.0% | 94.0% | --- | --- | | | | | |
| EP-080S-SS | VOLATILE TPH/BTEX COMPOUND SURROGATES | | | | | | | | | | | | |
| EP-080S-SS | 1,2-Dichloroethane-D4 | % | 1 | 104 | 91 | 95 | 101 | 98 | | | | | |
| EP-080S-SS | Toluene-D8 | % | 1 | 98 | 89 | 90 | 100 | 103 | | | | | |
| EP-080S-SS | 4-Bromofluorobenzene | % | 1 | 95 | 90 | 89 | 100 | 104 | | | | | |

**CERTIFICATE OF ANALYSIS**

CONTACT: MS RACHAEL CASSON
CLIENT: HLA-ENVIROSCIENCES PTY LTD
ADDRESS:
P O BOX 726
PYMBLE NSW 2073
ORDER No.: 119255
PROJECT: J1938/1-HOMEBUSH

BATCH: ES33505
SUB BATCH: 4
LABORATORY: SYDNEY
DATE RECEIVED: 14/05/2002
DATE COMPLETED: 23/05/2002
SAMPLE TYPE: SOIL
No. of SAMPLES: 2

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of Potentially Contaminated Soil (December 1999).

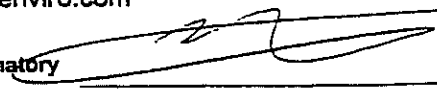
NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: michael.heery@alsenviro.com

Signatory 

LABORATORIES**AUSTRALASIA**

Sydney
Melbourne
Newcastle
Auckland

Hong Kong
Singapore
Kuala Lumpur
Bogor
Mumbai

AMERICAS

Vancouver
Santiago
Antofagasta
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



Batch:
Sub:
Site:

ES333505
4

Date of Issue:

23/05/2002

Client:
Client Reference:

HLA-ENVIROSCIENCES PTY LTD
J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | | | |
|------------|--|-----------------|-----|-------------------------------------|-------------------------------------|--|--|--|--|--|--|--|--|
| | | Date Sampled | | | | | | | | | | | |
| | | UNIT | LOR | 10
13/05/2002
BH10
1.8-2.0 | 20
13/05/2002
BH19
0.8-1.0 | | | | | | | | |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | 13.9 | 16.1 | | | | | | | | |
| EP-074A-SS | MONOCYCLIC AROMATIC HYDROCARBONS | | | | | | | | | | | | |
| EP-074A-SS | Benzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | Toluene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | Ethylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | meta- & para-Xylene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | Styrene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | ortho-Xylene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | Isopropylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | n-Propylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | 1,3,5-Trimethylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | sec-Butylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | 1,2,4-Trimethylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | tert-Butylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | p-Isopropyltoluene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074A-SS | n-Butylbenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074B-SS | OXYGENATED HYDROCARBONS | | | | | | | | | | | | |
| EP-074B-SS | Vinyl Acetate | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074B-SS | 2-Butanone (MEK) | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074B-SS | 4-Methyl-2-pentanone (MIBK) | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074B-SS | 2-Hexanone (MBK) | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074C-SS | SULFONATED COMPOUNDS | | | | | | | | | | | | |
| EP-074C-SS | Carbon disulfide | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074D-SS | FLUORINATED COMPOUNDS | | | | | | | | | | | | |
| EP-074D-SS | 2,2-Dichloropropane | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074D-SS | 1,2-Dichloropropane | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074D-SS | cis-1,3-Dichloropropylene | mg/kg | 1 | <1 | <1 | | | | | | | | |
| EP-074D-SS | trans-1,3-Dichloropropylene | mg/kg | 1 | <1 | <1 | | | | | | | | |
| EP-074D-SS | 1,2-Dibromoethane (EDB) | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074E-SS | HALOGENATED ALIPHATIC HYDROCARBONS (VOL) | | | | | | | | | | | | |
| EP-074E-SS | Dichlorodifluoromethane | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074E-SS | Chloromethane | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074E-SS | Vinyl chloride | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074E-SS | Bromomethane | mg/kg | 5 | <5 | <5 | | | | | | | | |

Batch: ES33505
Sub Batch: 4

Date of Issue: 23/05/2002

Client: HLA-ENVIROSCIENCES PTY LTD

Client Reference: J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | |
|-----------------------------------|-----------------------------|-----------------|-----|-----------------------|-----------------|--|--|--|--|
| | | Date Sampled | | 10 | 20 | | | | |
| | | UNIT | LOR | BH10
1.8-2.0 | BH18
0.8-1.0 | | | | |
| EP-074E:SS | Chloroethane | mg/kg | 5 | <5 | <5 | | | | |
| EP-074E:SS | Trichlorofluoromethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1-Dichloroethene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Iodomethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | trans-1,2-Dichloroethene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1-Dichloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | cis-1,2-Dichloroethene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1,1-Trichloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1-Dichloropropylene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Carbon tetrachloride | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,2-Dichloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Trichloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Dibromomethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1,2-Trichloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,3-Dichloropropane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Tetrachloroethene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1,1,2-Tetrachloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | trans-1,4-Dichloro-2-butene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | cis-1,4-Dichloro-2-butene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,1,2,2-Tetrachloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,2,3-Trichloropropane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Pentachloroethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | 1,2-Dibromo-3-chloropropane | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074E:SS | Hexachlorobutadiene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| HALOGENATED AROMATIC HYDROCARBONS | | | | | | | | | |
| EP-074F:SS | Chlorobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | Bromobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 2-Chlorotoluene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 4-Chlorotoluene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 1,3-Dichlorobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 1,4-Dichlorobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 1,2-Dichlorobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 1,2,4-Trichlorobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |
| EP-074F:SS | 1,2,3-Trichlorobenzene | mg/kg | 0.5 | <0.5 | <0.5 | | | | |

TRIALOMETHANES (VOLATILES)

Environmental

Australian Laboratory Services

84 008 838 029

BATCH: ES335B05

SUB: 4

DATE OF ISSUE: 23/05/2002

CLIENT: HLA-ENVIROSCIENCES PTY LTD

CLIENT REFERENCE: J1938/1-HOMEBUSH

CERTIFICATE OF ANALYSIS



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | | | |
|------------|------------------------------|-----------------|-----|-----------------------|--------------|--|--|--|--|--|--|--|--|
| | | Date Sampled | | 10 | 20 | | | | | | | | |
| | | UNIT | LOR | BH10_1.8-2.0 | BH19_0.8-1.0 | | | | | | | | |
| EP-074G-SS | Chloroform | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074G-SS | Bromodichloromethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074G-SS | Dibromochloromethane | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074H-SS | Bromoform | mg/kg | 0.5 | <0.5 | <0.5 | | | | | | | | |
| EP-074H-SS | NAPHTHALENE | | | | | | | | | | | | |
| EP-074H-SS | Naphthalene | mg/kg | 5 | <5 | <5 | | | | | | | | |
| EP-074S-SS | VOLATILE COMPOUND SURROGATES | | | | | | | | | | | | |
| EP-074S-SS | 1,2-Dichloroethane-D4 | % | 1 | 101 | 107 | | | | | | | | |
| EP-074S-SS | Toluene-D8 | % | 1 | 90 | 91 | | | | | | | | |
| EP-074S-SS | 4-Bromofluorobenzene | % | 1 | 89 | 88 | | | | | | | | |

QUALITY CONTROL REPORT



Batch: ES33505
Sub Batch: 4
Date of Issue: 23/05/2002
Client: HLA-ENVIROSCIENCES PTY LTD
Client Reference: J1938/1-HOMEBUSH

| | | | | SAMPLE IDENTIFICATION | | | | | | | | |
|-------------------|----------------------|-----------------|-----|-----------------------|------------|------------|------------|------------|--|--|--|--|
| | | Laboratory I.D. | | 100 | 101 | 102 | 103 | 104 | | | | |
| | | Date Sampled | | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | | | | |
| METHOD | ANALYSIS DESCRIPTION | UNIT | LOR | METHOD | NVSCS480 | NVSCS480 | NVSCS480 | NVSCS480 | | | | |
| | | | | BLANK | SCS | DCS | MS | MSD | | | | |
| CHECKS AND SPIKES | | | | | | | | | | | | |

| | | | | | | | | | |
|------------|--|-------|-----|------|-------|-------|-------|-------|------|
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| EP-074A-SS | MONOCYCLIC AROMATIC HYDROCARBONS | | | | | | | | |
| EP-074A-SS | Benzene | mg/kg | 0.5 | <0.5 | 103% | 104% | 82.1% | 101% | |
| EP-074A-SS | Toluene | mg/kg | 0.5 | <0.5 | 84.5% | 102% | 78.5% | 77.0% | |
| EP-074A-SS | Ethylbenzene | mg/kg | 0.5 | <0.5 | 89.2% | 88.8% | | | |
| EP-074A-SS | mela- & para-Xylene | mg/kg | 0.5 | <0.5 | 87.0% | 87.1% | | | |
| EP-074A-SS | Styrene | mg/kg | 0.5 | <0.5 | 83.5% | 84.5% | | | |
| EP-074A-SS | ortho-Xylene | mg/kg | 0.5 | <0.5 | 88.0% | 88.8% | | | |
| EP-074A-SS | Isopropylbenzene | mg/kg | 0.5 | <0.5 | 91.7% | 89.5% | | | |
| EP-074A-SS | n-Propylbenzene | mg/kg | 0.5 | <0.5 | 95.5% | 95.8% | | | |
| EP-074A-SS | 1,3,5-Trimethylbenzene | mg/kg | 0.5 | <0.5 | 88.0% | 94.1% | | | |
| EP-074A-SS | sec-Buylbenzene | mg/kg | 0.5 | <0.5 | 91.4% | 96.8% | | | |
| EP-074A-SS | 1,2,4-Trimethylbenzene | mg/kg | 0.5 | <0.5 | 83.4% | 99.4% | | | |
| EP-074A-SS | tert-Buylbenzene | mg/kg | 0.5 | <0.5 | 86.5% | 96.8% | | | |
| EP-074A-SS | p-Isopropyltoluene | mg/kg | 0.5 | <0.5 | 93.0% | 93.9% | | | |
| EP-074A-SS | n-Buylbenzene | mg/kg | 0.5 | <0.5 | 97.4% | 93.9% | | | |
| EP-074B-SS | OXYGENATED HYDROCARBONS | | | | | | | | |
| EP-074B-SS | Vinyl Acetate | mg/kg | 5 | <5 | 93.9% | 88.4% | | | |
| EP-074B-SS | 2-Butanone (MEK) | mg/kg | 5 | <5 | 101% | 88.8% | | | |
| EP-074B-SS | 4-Methyl-2-pentanone (MIBK) | mg/kg | 5 | <5 | 103% | 88.8% | | | |
| EP-074B-SS | 2-Hexanone (MBK) | mg/kg | 5 | <5 | 90.2% | 88.8% | | | |
| EP-074C-SS | SULFONATED COMPOUNDS | | | | | | | | |
| EP-074C-SS | Carbon disulfide | mg/kg | 0.5 | <0.5 | 95.0% | 96.7% | | | |
| EP-074D-SS | FUMIGANTS | | | | | | | | |
| EP-074D-SS | 2,2-Dichloropropane | mg/kg | 0.5 | <0.5 | 91.5% | 101% | | | |
| EP-074D-SS | 1,2-Dichloropropane | mg/kg | 0.5 | <0.5 | 106% | 99.6% | | | |
| EP-074D-SS | cis-1,3-Dichloropropylene | mg/kg | 1 | <1 | 97.2% | 98.2% | | | |
| EP-074D-SS | trans-1,3-Dichloropropylene | mg/kg | 1 | <1 | 95.4% | 95.5% | | | |
| EP-074D-SS | 1,2-Dibromoethane (EDB) | mg/kg | 0.5 | <0.5 | 93.7% | 95.7% | | | |
| EP-074E-SS | HALOGENATED ALIPHATIC HYDROCARBONS (VOL) | | | | | | | | |
| EP-074E-SS | Dichlorodifluoromethane | mg/kg | 5 | <5 | 93.2% | 96.9% | | | |
| EP-074E-SS | Chloromethane | mg/kg | 5 | <5 | 98.5% | 105% | | | |

Batch: ES33505
Sub: 4
Date of Issue: 23/05/2002



QUALITY CONTROL REPORT



Client: HLA-ENVIROSCIENCES PTY LTD
Client Reference: J1938/1-HOMEBUSH

| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | |
|------------|-----------------------------------|-----------------|-----|-----------------------|-----------------|-----------------|----------------|-----------------|--|--|--|
| | | Date Sampled | | 100 | 101 | 102 | 103 | 104 | | | |
| | | UNIT | LOR | METHOD
BLANK | NVSCS480
SCS | NVSCS480
DCS | NVSCS480
MS | NVSCS480
MSD | | | |
| EP-074E-SS | Vinyl chloride | mg/kg | 5 | <5 | 103% | 98.7% | --- | --- | | | |
| EP-074E-SS | Bromomethane | mg/kg | 5 | <5 | 104% | 94.0% | --- | --- | | | |
| EP-074E-SS | Chloroethane | mg/kg | 5 | <5 | 113% | 97.7% | --- | --- | | | |
| EP-074E-SS | Trichlorofluoromethane | mg/kg | 5 | <5 | 105% | 100% | --- | --- | | | |
| EP-074E-SS | 1,1-Dichloroethane | mg/kg | 0.5 | <0.5 | 104% | 99.5% | 90.5% | 92.6% | | | |
| EP-074E-SS | Iodomethane | mg/kg | 0.5 | <0.5 | 111% | 91.3% | --- | --- | | | |
| EP-074E-SS | trans-1,2-Dichloroethane | mg/kg | 0.5 | <0.5 | 101% | 101% | --- | --- | | | |
| EP-074E-SS | 1,1-Dichloroethane | mg/kg | 0.5 | <0.5 | 104% | 101% | --- | --- | | | |
| EP-074E-SS | cis-1,2-Dichloroethane | mg/kg | 0.5 | <0.5 | 91.7% | 101% | --- | --- | | | |
| EP-074E-SS | 1,1,1-Trichloroethane | mg/kg | 0.5 | <0.5 | 93.5% | 91.9% | --- | --- | | | |
| EP-074E-SS | 1,1-Dichloropropylene | mg/kg | 0.5 | <0.5 | 96.1% | 96.0% | --- | --- | | | |
| EP-074E-SS | Carbon tetrachloride | mg/kg | 0.5 | <0.5 | 100% | 98.3% | --- | --- | | | |
| EP-074E-SS | 1,2-Dichloroethane | mg/kg | 0.5 | <0.5 | 98.0% | 96.9% | --- | --- | | | |
| EP-074E-SS | Trichloroethane | mg/kg | 0.5 | <0.5 | 101% | 101% | 97.6% | 95.8% | | | |
| EP-074E-SS | Dibromomethane | mg/kg | 0.5 | <0.5 | 98.1% | 91.4% | --- | --- | | | |
| EP-074E-SS | 1,1,2-Trichloroethane | mg/kg | 0.5 | <0.5 | 96.0% | 88.8% | --- | --- | | | |
| EP-074E-SS | 1,3-Dichloropropane | mg/kg | 0.5 | <0.5 | 100% | 97.8% | --- | --- | | | |
| EP-074E-SS | Tetrachloroethene | mg/kg | 0.5 | <0.5 | 96.6% | 110% | --- | --- | | | |
| EP-074E-SS | 1,1,1,2-Tetrachloroethane | mg/kg | 0.5 | <0.5 | 90.0% | 94.7% | --- | --- | | | |
| EP-074E-SS | trans-1,4-Dichloro-2-butene | mg/kg | 0.5 | <0.5 | 81.1% | 101% | --- | --- | | | |
| EP-074E-SS | cis-1,4-Dichloro-2-butene | mg/kg | 0.5 | <0.5 | 109% | 98.5% | --- | --- | | | |
| EP-074E-SS | 1,1,2,2-Tetrachloroethane | mg/kg | 0.5 | <0.5 | 91.6% | 98.6% | --- | --- | | | |
| EP-074E-SS | 1,2,3-Trichloropropane | mg/kg | 0.5 | <0.5 | 95.8% | 93.4% | --- | --- | | | |
| EP-074E-SS | Pentachloroethane | mg/kg | 0.5 | <0.5 | 101% | 84.8% | --- | --- | | | |
| EP-074E-SS | 1,2-Dibromo-3-chloropropane | mg/kg | 0.5 | <0.5 | 93.0% | 102% | --- | --- | | | |
| EP-074E-SS | Hexachlorobutadiene | mg/kg | 0.5 | <0.5 | 95.4% | 92.8% | --- | --- | | | |
| EP-074F-SS | HALOGENATED AROMATIC HYDROCARBONS | | | | | | | | | | |
| EP-074F-SS | Chlorobenzene | mg/kg | 0.5 | <0.5 | 96.8% | 98.3% | 90.2% | 93.1% | | | |
| EP-074F-SS | Bromobenzene | mg/kg | 0.5 | <0.5 | 94.2% | 97.7% | --- | --- | | | |
| EP-074F-SS | 2-Chlorotoluene | mg/kg | 0.5 | <0.5 | 94.6% | 96.8% | --- | --- | | | |
| EP-074F-SS | 4-Chlorotoluene | mg/kg | 0.5 | <0.5 | 94.8% | 101% | --- | --- | | | |
| EP-074F-SS | 1,3-Dichlorobenzene | mg/kg | 0.5 | <0.5 | 92.4% | 99.0% | --- | --- | | | |

CHECKS AND SPIKES

QUALITY CONTROL REPORT



Batch: ES33505
 Sub Batch: 4
 Date of Issue: 23/05/2002
 Client: HLA-ENVIROSCIENCES PTY LTD
 Client Reference: J1938/1-HOMEBUSH

| | | | | SAMPLE IDENTIFICATION | | | | | | | | | |
|------------|------------------------------|-----------------|-----|-----------------------|--------------|--------------|-------------|--------------|-------------------|--|--|--|--|
| | | Laboratory I.D. | | 100 | 101 | 102 | 103 | 104 | | | | | |
| | | Date Sampled | | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | 14/05/2002 | | | | | |
| METHOD | ANALYSIS DESCRIPTION | UNIT | LOR | METHOD BLANK | NVSCS480 SCS | NVSCS480 DCS | NVSCS480 MS | NVSCS480 MSD | CHECKS AND SPIKES | | | | |
| EP-074F-SS | 1,4-Dichlorobenzene | mg/kg | 0.5 | <0.5 | 95.9% | 99.3% | --- | --- | | | | | |
| EP-074F-SS | 1,2-Dichlorobenzene | mg/kg | 0.5 | <0.5 | 98.7% | 100% | --- | --- | | | | | |
| EP-074F-SS | 1,2,4-Trichlorobenzene | mg/kg | 0.5 | <0.5 | 102% | 97.8% | --- | --- | | | | | |
| EP-074F-SS | 1,2,3-Trichlorobenzene | mg/kg | 0.5 | <0.5 | 111% | 108% | --- | --- | | | | | |
| EP-074G-SS | TRIHALOMETHANES (VOLATILES) | | | | | | | | | | | | |
| EP-074G-SS | Chloroform | mg/kg | 0.5 | <0.5 | 98.0% | 99.2% | --- | --- | | | | | |
| EP-074G-SS | Bromodichloromethane | mg/kg | 0.5 | <0.5 | 100% | 93.8% | --- | --- | | | | | |
| EP-074G-SS | Dibromochloromethane | mg/kg | 0.5 | <0.5 | 92.1% | 102% | --- | --- | | | | | |
| EP-074G-SS | Bromoform | mg/kg | 0.5 | <0.5 | 91.9% | 97.4% | --- | --- | | | | | |
| EP-074H-SS | NAPHTHALENE | | | | | | | | | | | | |
| EP-074H-SS | Naphthalene | mg/kg | 5 | <5 | 104% | 108% | --- | --- | | | | | |
| EP-074S-SS | VOLATILE COMPOUND SURROGATES | | | | | | | | | | | | |
| EP-074S-SS | 1,2-Dichloroethane-D4 | % | 1 | 95 | 101 | 104 | 83 | 81 | | | | | |
| EP-074S-SS | Toluene-D8 | % | 1 | 83 | 92 | 98 | 81 | 88 | | | | | |
| EP-074S-SS | 4-Bromofluorobenzene | % | 1 | 88 | 92 | 90 | 87 | 86 | | | | | |

CERTIFICATE OF ANALYSIS

CONTACT: MS RACHAEL CASSON
CLIENT: HLA-ENVIROSCIENCES PTY LTD
ADDRESS:
P O BOX 726
PYMBLE NSW 2073

ORDER No.: 119255
PROJECT: J1938/1-HOMEBUSH

BATCH: ES33505
SUB BATCH: 5
LABORATORY: SYDNEY
DATE RECEIVED: 14/05/2002
DATE COMPLETED: 23/05/2002
SAMPLE TYPE: SOIL
No. of SAMPLES: 5

COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. All analysis and Laboratory QC conducted in accordance with Schedule B(3) NEPM Guideline on Laboratory Analysis of Potentially Contaminated Soil (December 1999).

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: michael.heery@alsenviro.com

Signatory _____

LABORATORIES

AUSTRALASIA

Brisbane
Melbourne
Sydney
Newcastle
Auckland

Hong Kong
Singapore
Kuala Lumpur
Bogor
Mumbai

AMERICAS

Vancouver
Santiago
Antofagasta
Lima

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No. 10918

W

5

Date of Issue: 23/05/2002

Client:

Client Reference: J1938/1-HOMEBUSH

ES33505

5

Date of Issue: 23/05/2002

Client:

Client Reference: J1938/1-HOMEBUSH



| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | |
|------------|-----------------------------------|-----------------|-----|-----------------------|------------|------------|------------|------------|--|--|--|
| | | UNIT | LOR | 5 | 8 | 11 | 15 | 24 | | | |
| | | | | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | 13/05/2002 | | | |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | BH05_ | BH08_ | BH11_ | BH15_ | BH23_ | | | |
| EP-076A-SS | POLYNUCLEAR AROMATIC HYDROCARBONS | | | 0.4-0.5 | 0.9-1.0 | 3.8-4.0 | 1.8-2.0 | 0.03-0.2 | | | |
| EP-076A-SS | Naphthalene | mg/kg | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Acenaphthylene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Acenaphthene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Fluorene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Phenanthrene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Anthracene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Fluoranthene | mg/kg | 0.5 | 0.8 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Pyrene | mg/kg | 0.5 | 0.9 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Benz(a)anthracene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Chrysene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Benzo(b)fluoranthene | mg/kg | 0.5 | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Benzo(k)fluoranthene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Benzo(a)pyrene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Indeno(1,2,3-cd)pyrene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Dibenz(a,h)anthracene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076A-SS | Benzo(g,h,i)perylene | mg/kg | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076S-SS | SURROGATE COMPOUNDS | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | |
| EP-076S-SS | 2-Fluorobiphenyl | % | 1 | 91 | 85 | 97 | 98 | 94 | | | |
| EP-076S-SS | Anthracene-d10 | % | 1 | 93 | 103 | 107 | 108 | 98 | | | |
| EP-076S-SS | p-Terphenyl-d14 | % | 1 | 109 | 107 | 102 | 105 | 115 | | | |

Batch: ES33505
 Sub Batch: 5
 Date of Issue: 23/05/2002
 Client: HLA-ENVIROSCIENCES PTY LTD
 Client Reference: J1938/1-HOMEBUSH



QUALITY CONTROL REPORT

| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | |
|------------|-----------------------------------|-----------------|-----|-----------------------|--|-----------------|-------------------|-------------------|------------------|-------------------|--|
| | | UNIT | LOR | Date Sampled | | 100 | 101 | 102 | 103 | 104 | |
| | | | | 14/05/2002 | | METHOD
BLANK | NEPO78S550
SCS | NEPO78S550
DCS | NEPO78S550
MS | NEPO78S550
MSD | |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | | | | | | | | |
| EP-076A-SS | POLYNUCLEAR AROMATIC HYDROCARBONS | | | | | | | | | | |
| EP-076A-SS | Naphthalene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Acenaphthylene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Acenaphthene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Fluorene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Phenanthrene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Anthracene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Fluoranthene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Pyrene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Benz(a)anthracene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Chrysene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Benzo(b)fluoranthene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Benzo(k)fluoranthene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Benzo(e)pyrene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Indeno(1,2,3-cd)pyrene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Dibenz(a,h)anthracene | mg/kg | 0.5 | | | | | | | | |
| EP-076A-SS | Benzo(g,h,i)perylene | mg/kg | 0.5 | | | | | | | | |
| EP-076S-SS | SURROGATE COMPOUNDS | | | | | | | | | | |
| EP-076S-SS | 2-Fluorobiphenyl | % | 1 | | | 80 | 84 | 98 | 90 | 97 | |
| EP-076S-SS | Anthracene-d10 | % | 1 | | | 85 | 87 | 92 | 86 | 85 | |
| EP-076S-SS | p-Terphenyl-d14 | % | 1 | | | 95 | 106 | 109 | 94 | 94 | |

CHECKS AND SPIKES

ORGANICS QUALITY CONTROL REPORT

BATCH NO: ES33505

DATE BATCH RECEIVED: 15/05/02

CLIENT: HLA Enviroscience

DATE BATCH COMPLETED: 23/05/02

PROJECT:

| Method Code | Test | Matrix | Method Reference | | QC Lot Number | Date Samples Extracted | Date Samples Analysed |
|-------------|----------------|--------|------------------|-------------|---------------|------------------------|-----------------------|
| | | | Extraction | Analysis | | | |
| EP-066 | PCB | Soil | Tumbler | USEPA 8270B | NPCBS482 | 16/05/02 | 17/05/02 |
| EP-068 | Pesticides | Soil | Tumbler | USEPA 8270B | NOCOPS1069 | 16/05/02 | 17/05/02 |
| EP-071 | TPH(SV) | Soil | Tumbler | USEPA 8015A | NTPHT3280 | 16/05/02 | 18/05/02 |
| EP-071/80 | TPH(V)/BTEX | Soil | USEPA 5030A | USEPA 8260A | NVOCSS3280 | 16/05/02 | 16/05/02 |
| EP-074 | Volatiles Scan | Soil | USEPA 5030A | USEPA 8260A | NVSCS480 | 16/05/02 | 18/05/02 |
| EP-076 | PAH (USEPA | Soil | Tumbler | USEPA 8270C | NEP076S-550 | 16/05/02 | 17/05/02 |

Where applicable, internal standards are added to sample extracts prior to instrumental analysis. Absolute peak areas and retention times fall within the criteria specified in the individual methods. Continuing Calibration (CC) standards are run at the frequency of 1 in every 20 samples.

Abbreviations: SV = semivolatile, V = volatile

house methods

BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE

ALS EP-066 : PCB

QC LOT No. : NPCBS482
MATRIX: Soil

ANALYST : K. SHARARA

| COMPOUND | Blank
Conc | Spike
Level | SPIKE QC RESULTS | | | | Control Limits | | |
|------------------------|---------------|----------------|------------------|-------------|-----------------|-----|----------------|------|-----|
| | | | SCS
Conc | DCS
Conc | Average
Rec. | RPD | Rec. | | RPD |
| | mg/kg | mg/kg | mg/kg | mg/kg | % | % | Low | High | % |
| EP-066 : PCB | | | | | | | | | |
| Total PCBs | <LOR | 0.50 | 0.41 | 0.40 | 81 | 2 | 67 | 117 | 20 |
| EP-066 : PCB SURROGATE | | | | | | | | | |
| Decachlorobiphenyl | 100% | 0.50 | 97.5 | 99.8 | 99 | 2 | 69 | 117 | 20 |

COMMENTS:

- 1) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL - MATRIX SPIKE / DUPLICATE

ALS EP-066 : PCB ANALYSIS

QC LOT No. : NPCBS482
 MATRIX : Soil

ANALYST : K. SHARARA
 SPIKED SAMPLE : NZ525-11

| COMPOUND | Sample Results | Spike Level | QCSPIKE RESULTS | | | | Control Limits |
|-------------------------------|----------------|-------------|-----------------|----------|----------|-----|----------------|
| | | | MS Conc | MSD Conc | Av. Rec. | RPD | |
| | mg/kg | mg/kg | mg/kg | mg/kg | % | % | RPD |
| EP-066 : PCB | | | | | | | |
| Total PCBs | <LOR | 0.50 | 0.40 | 0.37 | 76 | 9 | 20 |
| EP-066 : PCB SURROGATE | | | | | | | |
| Decachlorobiphenyl | 0 | 0.50 | 106 | 99 | 102 | 7 | 20 |

COMMENTS :

- 1) The control limits are based on ALS laboratory statistical data (Method QWI-ORG/07)
- 2) * : RPD falls outside the recommended control limit.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-066 : PCB

QC LOT No. : NPCBS482
MATRIX : Soil

ANALYST : K. SHARAF

| COMPOUND | QC DUPLICATE RESULTS | | |
|-------------------------------|----------------------|--------------|-----|
| | NZ525
11 | NZ525
11D | RPD |
| | mg/kg | mg/kg | % |
| EP-066 : PCB | | | |
| Total PCBs | <LOR | <LOR | - |
| EP-066 : PCB SURROGATE | | | |
| Decachlorobiphenyl | 96.8 | 96.5 | 0 |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-066 : PCB

QC LOT No. : NPCBS482
MATRIX: Soil

ANALYST : K. SHARARA

| COMPOUND | QC DUPLICATE RESULTS | | |
|------------------------|----------------------|--------------|-----|
| | NZ525
13 | NZ525
13D | RPD |
| | mg/kg | mg/kg | % |
| EP-066 : PCB | | | |
| Total PCBs | <LOR | <LOR | - |
| EP-066 : PCB SURROGATE | | | |
| Decachlorobiphenyl | 78.83 | 76.47 | 3.0 |

| BATCH QUALITY CONTROL - CONTROL SPIKE/DUPLICATE | | | | | | | | | |
|---|---------------|----------------|------------------|-------------|-----------------|--------------------|----------------|------|--------|
| ALS EP-068 : Pesticides | | | | | | | | | |
| QC LOT No. : | | NOCOPS1069 | | | | ANALYST K. SHARARA | | | |
| MATRIX: | | Soils | | | | | | | |
| COMPOUND | Blank
Conc | Spike
Level | SPIKE QC RESULTS | | | | Control Limits | | |
| | | | SCS
Rec. | DCS
Rec. | Average
Rec. | RPD | Rec. | | RPD |
| | mg/kg | mg/kg | % | | % | % | Low | High | % |
| EP068A : OC Pesticides | | | | | | | | | |
| a-BHC | <0.025 | 0.25 | 94 | 80.3 | 87.2 | 15.7 | 77.6 | 104 | 0 - 20 |
| HCB | <0.025 | 0.25 | 79.1 | 95.1 | 87.1 | 18.4 | 75.8 | 112 | 0 - 20 |
| b- & g-BHC | <0.05 | 0.5 | 99.1 | 95.6 | 97.4 | 3.6 | 84.3 | 101 | 0 - 20 |
| d-BHC | <0.025 | 0.25 | 95 | 97.6 | 96.3 | 2.7 | 78.9 | 103 | 0 - 20 |
| Heptachlor | <0.025 | 0.25 | 94.5 | 92.4 | 93.5 | 2.25 | 80 | 109 | 0 - 20 |
| Aldrin | <0.025 | 0.25 | 95.5 | 92.8 | 94.2 | 2.87 | 85.4 | 108 | 0 - 20 |
| Heptachlor epoxide | <0.025 | 0.25 | 92.6 | 94 | 93.3 | 1.5 | 78.7 | 105 | 0 - 20 |
| Chlordane peak no 1 | <0.025 | 0.25 | 96.1 | 91.6 | 93.9 | 4.79 | 72.6 | 99.8 | 0 - 20 |
| Endosulfan 1 | <0.025 | 0.25 | 81.7 | 90.5 | 86.1 | 10.2 | 84.2 | 106 | 0 - 20 |
| Chlordane peak no. 2 | <0.025 | 0.25 | 88.6 | 92.1 | 90.4 | 3.87 | 81.4 | 106 | 0 - 20 |
| Dieldrin | <0.025 | 0.25 | 92.5 | 90.4 | 91.5 | 2.3 | 79.8 | 102 | 0 - 20 |
| DDE | <0.025 | 0.25 | 90.8 | 93 | 91.9 | 2.39 | 77.4 | 99.5 | 0 - 20 |
| Endrin | <0.025 | 0.25 | 92.9 | 92.6 | 92.8 | 0.32 | 81.6 | 105 | 0 - 20 |
| Endosulfan 2 | <0.025 | 0.25 | 81.6 | 93.6 | 87.6 | 13.7 | 80.6 | 107 | 0 - 20 |
| DDD | <0.025 | 0.25 | 90.7 | 92.4 | 91.6 | 1.86 | 77.8 | 98.4 | 0 - 20 |
| Endrin aldehyde | <0.025 | 0.25 | 91.8 | 94.8 | 93.3 | 3.22 | 81.5 | 99 | 1 - 20 |
| Endosulfan sulfate | <0.025 | 0.25 | 94.3 | 93 | 93.7 | 1.39 | 79.9 | 101 | 0 - 20 |
| DDT | <0.1 | 0.25 | 97.1 | 93.9 | 95.5 | 3.35 | 79.9 | 101 | 0 - 20 |
| Endrin ketone | <0.025 | 0.25 | 96.1 | 91.4 | 93.8 | 5.01 | 70.6 | 102 | 0 - 20 |
| Methoxychlor | <0.1 | 0.25 | 94.4 | 84 | 89.2 | 11.7 | 79.9 | 108 | 0 - 20 |
| EP068B : OP Pesticides | | | | | | | | | |
| Dichlorvos | <0.025 | 0.25 | 92.9 | 92.7 | 92.8 | 0.22 | 80.6 | 103 | 0 - 20 |
| Demeton-s-methyl | <0.025 | 0.25 | 80.9 | 86.1 | 83.5 | 6.23 | 76.8 | 104 | 0 - 20 |
| Monocrotophos | <0.1 | 0.25 | 96.5 | 90.1 | 93.3 | 6.86 | 79.6 | 107 | 0 - 20 |
| Dimethoate | <0.025 | 0.25 | 76.7 | 95.2 | 86 | 21.5 | 77.9 | 97.1 | 0 - 20 |
| Diazinon | <0.025 | 0.25 | 96.1 | 92.2 | 94.2 | 4.14 | 85.1 | 104 | 0 - 20 |
| Chlorpyrifos methyl | <0.025 | 0.25 | 95.1 | 93.1 | 94.1 | 2.13 | 81.7 | 104 | 0 - 20 |
| Parathion methyl | <0.1 | 0.25 | 97.6 | 85.4 | 91.5 | 13.3 | 79.6 | 102 | 0 - 20 |
| Malathion | <0.025 | 0.25 | 94.3 | 89.7 | 92 | 5 | 84.2 | 101 | 0 - 20 |
| Fenthion | <0.025 | 0.25 | 83.5 | 92.6 | 88.1 | 10.3 | 79.7 | 101 | 0 - 20 |
| Chlorpyrifos | <0.025 | 0.25 | 98.4 | 93.7 | 96.1 | 4.89 | 81.4 | 103 | 0 - 20 |
| Parathion | <0.1 | 0.25 | 80.2 | 95.1 | 87.7 | 17 | 78.1 | 103 | 0 - 20 |
| Pinimphos ethyl | <0.025 | 0.25 | 98.9 | 91.2 | 95.1 | 8.1 | 79.5 | 102 | 0 - 20 |
| Chlorfenvinphos Z | <0.025 | 0.25 | 99.6 | 91.8 | 95.7 | 8.15 | 78.6 | 106 | 0 - 20 |
| Bromophos ethyl | <0.025 | 0.25 | 91.2 | 91.7 | 91.5 | 0.55 | 80.8 | 103 | 0 - 20 |
| Fenamiphos | <0.025 | 0.25 | 95.1 | 95.5 | 95.3 | 0.42 | 77 | 107 | 0 - 20 |
| Prothiofos | <0.025 | 0.25 | 94.2 | 93.8 | 94.1 | 0.32 | 77.3 | 106 | 0 - 20 |
| Ethion | <0.025 | 0.25 | 99.2 | 97 | 98.1 | 2.24 | 80 | 104 | 0 - 20 |
| Carbofenthion | <0.025 | 0.25 | 84.1 | 80.5 | 82.3 | 4.37 | 79 | 104 | 0 - 20 |
| Azinphos methyl | <0.025 | 0.25 | 93 | 97.6 | 95.3 | 4.83 | 79.4 | 108 | 0 - 20 |

| ALS EP-068 : Pesticides | | | | | | | | | |
|----------------------------|---------------|----------------|------------------|-------------|--------------------|------|----------------|------|--------|
| QC LOT No. : | | NOCOPS1069 | | | ANALYST K. SHARARA | | | | |
| MATRIX: | | Soils | | | | | | | |
| COMPOUND | Blank
Conc | Spike
Level | SPIKE QC RESULTS | | | | Control Limits | | |
| | | | SCS
Rec. | DCS
Rec. | Average
Rec. | RPD | Rec. | | RPD |
| | mg/kg | mg/kg | % | | % | % | Low | High | % |
| EP068C : Triazines | | | | | | | | | |
| Simazine | <0.025 | 0.25 | 96.5 | 96.1 | 96.3 | 0.42 | 73.5 | 103 | 0 - 20 |
| Atrazine | <0.025 | 0.25 | 80.6 | 95.3 | 88 | 16.7 | 54.1 | 109 | 0 - 20 |
| EP068D :Pyrethroids | | | | | | | | | |
| Cypermethrins(multi peaks) | <0.1 | 0.25 | 94.4 | 98.8 | 96.6 | 4.55 | 80.9 | 101 | 0 - 20 |
| EP068S : OC Surrogate | | | | | | | | | |
| Dibromo-DDE | 83.3% | 0.5 | 86.7 | 85.3 | 86 | 1.63 | 80.2 | 118 | 0 - 20 |
| EP068T : OP Surrogate | | | | | | | | | |
| DEF | 81.8% | 0.5 | 91.8 | 90 | 90.9 | 1.98 | 85.1 | 111 | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) * : Recovery or RPD falls outside of the recommended control limits.

| BATCH QUALITY CONTROL — MATRIX SPIKE/DUPLICATE | | | | | | | |
|--|----------------|-------------|------------------|------------|--------------|------------|-------------|
| ALS EP-068 : Semivolatile Organic Compounds | | | | | | | |
| QC LOT No. : | | NOCOPS1069 | | ANALYST : | | K. SHARARA | |
| MATRIX: | | Soils | | Sample ID: | | ES33394-4 | |
| COMPOUND | Sample Results | Spike Level | SPIKE QC RESULTS | | | | Cont. Limit |
| | | | MS Rec. | MSD Rec. | Average Rec. | RPD | RPD |
| | mg/kg | mg/kg | % | % | % | % | % |
| EP068A : OC Pesticides | | | | | | | |
| b- & g-BHC | <0.05 | 0.25 | 93.6 | 95.7 | 94.7 | 2.22 | 0 - 20 |
| Heptachlor | <0.025 | 0.25 | 80 | 78.2 | 79.1 | 2.28 | 0 - 20 |
| Aldrin | <0.025 | 0.25 | 80.7 | 80.3 | 80.5 | 0.497 | 0 - 20 |
| Dieldrin | <0.025 | 0.25 | 87.9 | 91.4 | 89.7 | 3.9 | 0 - 20 |
| Endrin | <0.025 | 1 | 79.5 | 74.1 | 76.8 | 7.03 | 0 - 20 |
| DDT | <0.1 | 1 | 72 | 69.4 | 70.7 | 3.68 | 0 - 20 |
| EP068 : OP Pesticides | | | | | | | |
| Diazinon | <0.025 | 0.25 | 91 | 94.4 | 92.7 | 3.67 | 0 - 20 |
| Chlorpyrifos methyl | <0.025 | 0.25 | 90.3 | 93.1 | 91.7 | 3.05 | 0 - 20 |
| Pirimiphos ethyl | <0.025 | 0.25 | 97.7 | 92.4 | 95.1 | 5.58 | 0 - 20 |
| Bromophos ethyl | <0.025 | 0.25 | 99.6 | 93.7 | 96.7 | 6.1 | 0 - 20 |
| Prothiofos | <0.025 | 0.25 | 97.9 | 96.1 | 97 | 1.86 | 0 - 20 |
| EP068S : OC Surrogate | | | | | | | |
| Dibromo-DDE | 85.8% | 0.5 | 95.8 | 95.7 | 95.8 | 0.104 | 0 - 20 |
| EP068T : OP Surrogate | | | | | | | |
| DEF | 84.8% | 0.5 | 91.2 | 94.3 | 92.8 | 3.34 | 0 - 20 |

COMMENTS:

- 1) The RPD control limits are fixed.
- 2) *: RPD falls outside the recommended control limit.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-068 : Pesticides

LOT No. NOCOPS1069
 MATRIX : Soils
 ANALYST: K. SHARARA

| COMPOUND | | QC DUPLICATE RESULTS | | | |
|------------------------|-------|----------------------|---------|-----|-------------|
| | | ES33394 | ES33394 | RPD | Cont. Limit |
| | | 4 | 4D | | |
| LOR | mg/kg | mg/kg | mg/kg | % | |
| EP068A : OC Pesticides | | | | | |
| a-BHC | 0.025 | <0.025 | <0.025 | n/a | |
| HCB | 0.025 | <0.025 | <0.025 | n/a | |
| b- & g-BHC | 0.05 | <0.05 | <0.05 | n/a | |
| d-BHC | 0.025 | <0.025 | <0.025 | n/a | |
| Heptachlor | 0.025 | <0.025 | <0.025 | n/a | |
| Aldrin | 0.025 | <0.025 | <0.025 | n/a | |
| heptachlor epoxide | 0.025 | <0.025 | <0.025 | n/a | |
| Chlordane peak no 1 | 0.025 | <0.025 | <0.025 | n/a | |
| Endosulfan 1 | 0.025 | <0.025 | <0.025 | n/a | |
| Chlordane peak no. 2 | 0.025 | <0.025 | <0.025 | n/a | |
| Dieldrin | 0.025 | <0.025 | <0.025 | n/a | |
| DDE | 0.025 | <0.025 | <0.025 | n/a | |
| Endrin | 0.025 | <0.025 | <0.025 | n/a | |
| Endosulfan 2 | 0.025 | <0.025 | <0.025 | n/a | |
| DDD | 0.025 | <0.025 | <0.025 | n/a | |
| Endrin aldehyde | 0.025 | <0.025 | <0.025 | n/a | |
| Endosulfan sulfate | 0.025 | <0.025 | <0.025 | n/a | |
| DDT | 0.1 | <0.1 | <0.1 | n/a | |
| Endrin ketone | 0.025 | <0.025 | <0.025 | n/a | |
| Methoxychlor | 0.1 | <0.1 | <0.1 | n/a | |
| EP068B : OP Pesticides | | | | | |
| Dichlorvos | 0.025 | <0.025 | <0.025 | n/a | |
| Demeton-s-methyl | 0.025 | <0.025 | <0.025 | n/a | |
| Monocrotophos | 0.1 | <0.1 | <0.1 | n/a | |
| Dimethoate | 0.025 | <0.025 | <0.025 | n/a | |
| Diazinon | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorpyrifos methyl | 0.025 | <0.025 | <0.025 | n/a | |
| Parathion methyl | 0.1 | <0.1 | <0.1 | n/a | |
| Malathion | 0.025 | <0.025 | <0.025 | n/a | |
| Fenthion | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorpyrifos | 0.025 | <0.025 | <0.025 | n/a | |
| Parathion | 0.1 | <0.1 | <0.1 | n/a | |
| Phosphos ethyl | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorfenvinphos E | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorfenvinphos Z | 0.025 | <0.025 | <0.025 | n/a | |
| Bromonpas ethyl | 0.025 | <0.025 | <0.025 | n/a | |
| Phosphos | 0.025 | <0.025 | <0.025 | n/a | |
| Phosphos | 0.025 | <0.025 | <0.025 | n/a | |
| Ethion | 0.025 | <0.025 | <0.025 | n/a | |
| Carbofenthion | 0.025 | <0.025 | <0.025 | n/a | |
| Azinphos methyl | 0.025 | <0.025 | <0.025 | n/a | |

BATCH QUALITY CONTROL — DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1069
 MATRIX : Soils
 ANALYST: K. SHARARA

| COMPOUND | | LOR
mg/kg | QC DUPLICATE RESULTS | | | |
|---------------------------|-------|--------------|----------------------|---------|--------|-------------|
| | | | ES33394 | ES33394 | RPD | Cont. Limit |
| | | | 4 | 4D | | |
| | | mg/kg | mg/kg | | % | |
| EP068C : Triazines | | | | | | |
| Simazine | 0.025 | <0.025 | <0.025 | n/a | | |
| Atrazine | 0.025 | <0.025 | <0.025 | n/a | | |
| EP068D : Pyrethroids | | | | | | |
| Cypermethrins(multipeaks) | 0.1 | <0.1 | <0.1 | n/a | | |
| EP068S : OC Surrogate | | | | | | |
| Dibromo-DDE | 1% | 85.8% | 82.3% | 4.16 | 0 - 20 | |
| EP068T : OP Surrogate | | | | | | |
| DEF | 1% | 84.8% | 84.3% | 0.591 | 0 - 20 | |

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1069
 MATRIX : Soils
 ANALYST: K. SHARARA

| COMPOUND | | QC DUPLICATE RESULTS | | | |
|------------------------|-------|----------------------|---------|------|-------------|
| | | ES33394 | ES33394 | RPD | Cont. Limit |
| | | 12 | 12D | | |
| LOR
mg/kg | | mg/kg | mg/kg | % | |
| EP068A : OC Pesticides | | | | | |
| a-BHC | 0.025 | <0.025 | <0.025 | n/a | |
| HCB | 0.025 | <0.025 | <0.025 | n/a | |
| h- & q-BHC | 0.05 | <0.05 | <0.05 | n/a | |
| g-BHC | 0.025 | <0.025 | <0.025 | n/a | |
| Heptachlor | 0.025 | <0.025 | <0.025 | n/a | |
| lindane | 0.025 | <0.025 | <0.025 | n/a | |
| Heptachlor epoxide | 0.025 | <0.025 | <0.025 | n/a | |
| Chlordane peak no 1 | 0.025 | 0.0878 | 0.0702 | 22.3 | No limit |
| Endosulfan 1 | 0.025 | <0.025 | <0.025 | n/a | |
| Chlordane peak no. 2 | 0.025 | 0.0457 | 0.043 | 6.09 | No limit |
| Dieldrin | 0.025 | <0.025 | <0.025 | n/a | |
| DDE | 0.025 | <0.025 | <0.025 | n/a | |
| Endrin | 0.025 | <0.025 | <0.025 | n/a | |
| Endosulfan 2 | 0.025 | <0.025 | <0.025 | n/a | |
| DDD | 0.025 | <0.025 | <0.025 | n/a | |
| Endrin aldehyde | 0.025 | <0.025 | <0.025 | n/a | |
| Endosulfan sulfate | 0.025 | <0.025 | <0.025 | n/a | |
| DDT | 0.1 | <0.1 | <0.1 | n/a | |
| Endrin ketone | 0.025 | <0.025 | <0.025 | n/a | |
| Methoxychlor | 0.1 | <0.1 | <0.1 | n/a | |
| EP068B : OP Pesticides | | | | | |
| Dichlorvos | 0.025 | <0.025 | <0.025 | n/a | |
| Demeton-s-methyl | 0.025 | <0.025 | <0.025 | n/a | |
| Monocrotophos. | 0.1 | <0.1 | <0.1 | n/a | |
| Dimethoate | 0.025 | <0.025 | <0.025 | n/a | |
| Diazinon | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorpyrifos methyl | 0.025 | <0.025 | <0.025 | n/a | |
| Disulfoton methyl | 0.1 | <0.1 | <0.1 | n/a | |
| Carbathion | 0.025 | <0.025 | <0.025 | n/a | |
| Fenitrothion | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorpyrifos | 0.025 | <0.025 | <0.025 | n/a | |
| Parathion | 0.1 | <0.1 | <0.1 | n/a | |
| Pinphos ethyl | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorfenvinphos E | 0.025 | <0.025 | <0.025 | n/a | |
| Chlorfenvinphos Z | 0.025 | <0.025 | <0.025 | n/a | |
| Bromophos ethyl | 0.025 | <0.025 | <0.025 | n/a | |
| Fenamiphos | 0.025 | <0.025 | <0.025 | n/a | |
| Prothiofos | 0.025 | <0.025 | <0.025 | n/a | |
| Ethion | 0.025 | <0.025 | <0.025 | n/a | |
| Carbofenthrion | 0.025 | <0.025 | <0.025 | n/a | |
| Azinphos methyl | 0.025 | <0.025 | <0.025 | n/a | |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-068 : Pesticides

QC LOT No. : NOCOPS1069
 MATRIX : Soils
 ANALYST: K. SHARARA

| COMPOUND | | QC DUPLICATE RESULTS | | | |
|---------------------------|--------------|----------------------|---------|-------|-------------|
| | | ES33394 | ES33394 | RPD | Cont. Limit |
| | | 12 | 12D | | |
| | LOR
mg/kg | mg/kg | mg/kg | | % |
| EP068C : Triazines | | | | | |
| Simazine | 0.025 | <0.025 | <0.025 | n/a | |
| Atrazine | 0.025 | <0.025 | <0.025 | n/a | |
| EP068D : Pyrethroids | | | | | |
| Cypermethrins(multipeaks) | 0.1 | <0.1 | <0.1 | n/a | |
| EP068S : OC Surrogate | | | | | |
| Dibromo-DDE | 1% | 82.2% | 81.8% | 0.488 | 0 - 20 |
| EP068T : OP Surrogate | | | | | |
| DEF | 1% | 77.2% | 78.4% | 1.54 | 0 - 20 |

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL - CONTROL SPIKE/DUPLICATE

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

Vol QC Lot : NVOCS3280
Semivol QC Lot : NTPHT3280

MATRIX : Soil

| COMPOUND | BATCH
ADJ.
(MDL) | Blank
Conc.
mg/kg | Spike
Conc.
mg/kg | Spike Results | | | | Control Limits | | |
|----------|------------------------|-------------------------|-------------------------|---------------|-------|------|-----|----------------|------|-----|
| | | | | SCS | DCS | Av. | RPD | Recovery | | RPD |
| | | | | Conc. | Conc. | Rec. | | % | | |
| | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | % | % | Low | High | % |
| C6-C9 | 2.0 | <LOR | 20 | 18.4 | 19.1 | 94 | 4 | 92 | 109 | 20 |
| C10-C14 | 25 | <LOR | 200 | 216 | 218 | 109 | 1 | 80 | 122 | 20 |
| C15-C28 | 50 | <LOR | 200 | 212 | 214 | 107 | 1 | 79 | 120 | 20 |
| C29-C36 | 50 | <LOR | 200 | 220 | 216 | 109 | 2 | 82 | 126 | 20 |

COMMENTS:

- 1) The control limits are based on ALS laboratory statistical data (Method QWI-ORG/07).
- 2) * : Recovery or RPD falls outside the recommended control limit.
- 3) MDL = Method Detection Limit
- 4) LOR = Level Of Reporting

BATCH QUALITY CONTROL - CONTROL SPIKE/DUPLICATE

ALS EP-080 : BTEX ANALYSIS

QC Lot No. : NVOCS3280

MATRIX : Soil

| COMPOUND | BATCH | Blank | Spike | Spike Results | | | | Control Limits | | |
|---------------|-------|-------|-------|---------------|-------|------|-----|----------------|------|-----|
| | ADJ. | Conc. | Conc. | SCS | DCS | Av. | RPD | Recovery | | RPD |
| | (MDL) | | | Conc. | Conc. | Rec. | | % | | |
| | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | % | % | Low | High | % |
| Benzene | 0.1 | <LOR | 1.0 | 0.88 | 0.94 | 91 | 7 | 86 | 111 | 20 |
| Toluene | 0.1 | <LOR | 1.0 | 0.87 | 0.92 | 89 | 6 | 81 | 115 | 20 |
| Chlorobenzene | 0.1 | <LOR | 1.0 | 0.96 | 0.92 | 94 | 4 | 84 | 112 | 20 |
| Ethylbenzene | 0.1 | <LOR | 1.0 | 0.92 | 0.93 | 92 | 1 | 85 | 112 | 20 |
| m- & p-Xylene | 0.1 | <LOR | 1.0 | 0.91 | 0.90 | 91 | 1 | 84 | 110 | 20 |
| o-Xylene | 0.1 | <LOR | 1.0 | 0.94 | 0.94 | 94 | 0 | 86 | 108 | 20 |

COMMENTS :

- 1) The control limits are based on ALS laboratory statistical data (Method QWI-ORG/07).
- 2) * : Recovery or RPD falls outside the recommended control limit.
- 3) MDL = Method Detection Limit
- 4) LOR = Level Of Reporting

BATCH QUALITY CONTROL - MATRIX SPIKE/ DUPLICATE

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

Vol QC Lot : NVOC3280
Semivol QC Lot : NTPHT3280

SPIKED SAMPLE : ES33357-3
MATRIX : SOIL

| COMPOUND | Sample Results | Spike Level | Spike Results | | | | Control Limits |
|----------|----------------|-------------|---------------|------|------|-----|----------------|
| | | | MS | MSD | Av. | RPD | |
| | mg/kg | mg/kg | Conc | Conc | Rec. | | RPD |
| C6-C9 | <LOR | 10 | 9.3 | 9.1 | 92 | 2 | 20 |
| C10-C14 | <LOR | 430 | 422 | 450 | 101 | 6 | 20 |
| C15-C28 | <LOR | 1570 | 1252 | 1266 | 80 | 1 | 20 |
| C29-C36 | <LOR | N/A | — | — | — | — | — |

COMMENTS :

- 1) LOR: level of reporting
- 2) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/06)
- 3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL - MATRIX SPIKE/ DUPLICATE

ALS EP-080 : BTEX ANALYSIS

QC Lot No. : NVOCS3280

SPIKED SAMPLE : ES33357-3
MATRIX : SOIL

| COMPOUND | Sample Results | Spike Level | Spike Results | | | | Control Limits |
|---------------|----------------|-------------|---------------|----------|----------|-----|----------------|
| | | | MS Conc | MSD Conc | Av. Rec. | RPD | |
| | mg/kg | mg/kg | mg/kg | mg/kg | % | % | RPD |
| Benzene | <LOR | 2.5 | 2.2 | 2.2 | 87 | 1 | 20 |
| Toluene | <LOR | 2.5 | 1.7 | 1.8 | 70 | 3 | 20 |
| Chlorobenzene | <LOR | 2.5 | 2.4 | 2.5 | 99 | 3 | 20 |

COMMENTS :

- 1) LOR: level of reporting
- 2) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/06)
- 3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

SEMIVOLATILES QC LOT NO.:
VOLATILES QC LOT No.:

NTPHT3280
NVOCS3280

ANALYST: NENSI.K.
MATRIX : Soil

| COMPOUND | QC DUPLICATE RESULTS | | |
|----------|----------------------|---------|-----|
| | ES33357 | ES33357 | RPD |
| | 3 | 3DUP | |
| | mg/kg | mg/kg | % |
| C 6-C 9 | <LOR | <LOR | - |
| C10-C14 | <LOR | <LOR | - |
| C15-C28 | <LOR | <LOR | - |
| C29-C36 | <LOR | <LOR | - |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-080 : BTEX ANALYSIS

QC Lot No
MATRIX

NVOC3280
Soil

Analyst : S. GREEN

| QC DUPLICATE RESULTS | | | |
|----------------------|--------------|-----------------|-----|
| COMPOUND | ES33357
3 | ES33357
3DUP | RPD |
| | mg/kg | mg/kg | % |
| Benzene | <LOR | <LOR | - |
| Toluene | <LOR | <LOR | - |
| Chlorobenzene | <LOR | <LOR | - |
| Ethylbenzene | <LOR | <LOR | - |
| m- & p-Xylene | <LOR | <LOR | - |
| o-Xylene | <LOR | <LOR | - |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

SEMIVOLATILES QC LOT NO.: NTPHT3280
VOLATILES QC LOT No.: NVOC3280

ANALYST: NENSI.K.
MATRIX : Soil

| COMPOUND | QC DUPLICATE RESULTS | | |
|----------|----------------------|---------|-----|
| | ES33357 | ES33357 | RPD |
| | 7 | 7DUP | |
| | mg/kg | mg/kg | % |
| C 6-C 9 | <LOR | <LOR | - |
| C10-C14 | <LOR | <LOR | - |
| C15-C28 | <LOR | <LOR | - |
| C29-C36 | <LOR | <LOR | - |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-080 : BTEX ANALYSIS

QC Lot No. : NVOCS3280
MATRIX : Soil

Analyst : S. GREEN

| QC DUPLICATE RESULTS | | | |
|----------------------|---------|---------|-----|
| COMPOUND | ES33357 | ES33357 | RPD |
| | 7 | 7DUP | |
| | mg/kg | mg/kg | % |
| Benzene | <LOR | <LOR | -- |
| Toluene | <LOR | <LOR | -- |
| Chlorobenzene | <LOR | <LOR | -- |
| Ethylbenzene | <LOR | <LOR | -- |
| m- & p-Xylene | <LOR | <LOR | -- |
| o-Xylene | <LOR | <LOR | -- |

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS480

ANALYST A.ROSSI

MATRIX: Soils

| COMPOUND | Blank | Spike | SPIKE QC RESULTS | | | | Control Limits | | |
|-----------------------------------|-------|-------|------------------|------|---------|------|----------------|------|--------|
| | Conc | Level | SCS | DCS | Average | RPD | Rec. | | RPD |
| | mg/kg | mg/kg | Rec. | Rec. | Rec. | | | | |
| | | | % | | % | % | Low | High | % |
| EP-074A-SS : Monocyclic Aromatics | | | | | | | | | |
| Benzene | <LOR | 1.0 | 103 | 104 | 104 | 0.97 | 78.5 | 125 | 0 - 20 |
| Toluene | <LOR | 1.0 | 94.5 | 102 | 98.3 | 7.63 | 76.2 | 126 | 0 - 20 |
| Ethylbenzene | <LOR | 1.0 | 89.2 | 88.6 | 88.9 | 0.68 | 81.7 | 121 | 0 - 20 |
| m & p-Xylene | <LOR | 2.0 | 97 | 97.1 | 97.1 | 0.1 | 80.1 | 119 | 0 - 20 |
| Styrene | <LOR | 1.0 | 93.5 | 94.5 | 94 | 1.06 | 80.3 | 122 | 0 - 20 |
| o-Xylene | <LOR | 1.0 | 88 | 88.8 | 88.4 | 0.91 | 79.6 | 119 | 0 - 20 |
| Isopropylbenzene | <LOR | 1.0 | 91.7 | 89.5 | 90.6 | 2.43 | 78.4 | 121 | 0 - 20 |
| n-Propylbenzene | <LOR | 1.0 | 95.5 | 95.6 | 95.6 | 0.11 | 80 | 117 | 0 - 20 |
| 1,3,5-Trimethylbenzene | <LOR | 1.0 | 88 | 94.1 | 91.1 | 6.7 | 81 | 116 | 0 - 20 |
| sec-Butylbenzene | <LOR | 1.0 | 91.4 | 96.6 | 94 | 5.53 | 78.9 | 117 | 0 - 20 |
| 1,2,4-Trimethylbenzene | <LOR | 1.0 | 93.4 | 99.4 | 96.4 | 6.22 | 83 | 115 | 0 - 20 |
| tert-Butylbenzene | <LOR | 1.0 | 96.5 | 98.8 | 97.7 | 2.36 | 81.6 | 119 | 0 - 20 |
| p-Isopropyltoluene | <LOR | 1.0 | 93 | 93.9 | 93.5 | 0.96 | 81.2 | 120 | 0 - 20 |
| n-Butylbenzene | <LOR | 1.0 | 97.4 | 93.9 | 95.7 | 3.66 | 80.8 | 116 | 0 - 20 |
| EP-074B-SS : Oxygenated Compounds | | | | | | | | | |
| 2-Propanone(Acetone) | <LOR | 10.0 | 89.2 | 105 | 97.1 | 16.3 | 70.1 | 133 | 0 - 20 |
| Vinyl acetate | <LOR | 10.0 | 93.9 | 88.4 | 91.2 | 6.03 | 73.2 | 123 | 0 - 20 |
| 2-Butanone (MEK) | <LOR | 10.0 | 101 | 96.6 | 98.8 | 4.45 | 71.1 | 134 | 0 - 20 |
| 4-Methyl-2-pentanone (MIBK) | <LOR | 10.0 | 103 | 86.8 | 94.9 | 17.1 | 75.3 | 126 | 0 - 20 |
| 2-Hexanone (MBK) | <LOR | 10.0 | 90.2 | 88.8 | 89.5 | 1.56 | 73.7 | 132 | 0 - 20 |
| EP-074C-SS : Sulfonated Compounds | | | | | | | | | |
| Carbendisulfide | <LOR | 1.0 | 95 | 96.7 | 95.9 | 1.77 | 75.8 | 122 | 0 - 20 |
| EP-074D-SS : Fumigants | | | | | | | | | |
| 2,2-Dichloropropane | <LOR | 1.0 | 91.5 | 101 | 96.3 | 8.87 | 69.6 | 118 | 0 - 20 |
| 1,2-Dichloropropane | <LOR | 1.0 | 106 | 99.6 | 103 | 6.23 | 80.6 | 119 | 0 - 20 |
| cis-1,3-Dichloropropene | <LOR | 2.0 | 97.2 | 98.2 | 97.7 | 1.02 | 75.4 | 124 | 0 - 20 |
| trans-1,3-Dichloropropene | <LOR | 2.0 | 95.4 | 95.5 | 95.5 | 0.11 | 77.2 | 122 | 0 - 20 |
| 1,2-Dibromoethane | <LOR | 1.0 | 93.7 | 95.7 | 94.7 | 2.11 | 80.5 | 123 | 0 - 20 |

BATCH QUALITY CONTROL — CONTROL SPIKE/DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No.: NVSCS480

ANALYST A.ROSSI

MATRIX: Soils

| COMPOUND | Blank
Conc | Spike
Level | SPIKE QC RESULTS | | | | Control Limits | | |
|--|---------------|----------------|------------------|-------------|-----------------|------|----------------|------|--------|
| | | | SCS
Rec. | DCS
Rec. | Average
Rec. | RPD | Rec. | | RPD |
| | mg/kg | mg/kg | % | % | % | % | Low | High | % |
| EP-074E-SS : Chlorinated Aliphatic Compounds | | | | | | | | | |
| Dichlorodifluoromethane | <LOR | 10.0 | 93.2 | 96.9 | 95.1 | 3.89 | 75.6 | 128 | 0 - 20 |
| Chloromethane | <LOR | 10.0 | 96.5 | 105 | 101 | 8.44 | 75 | 129 | 0 - 20 |
| Vinyl chloride | <LOR | 10.0 | 103 | 98.7 | 101 | 4.26 | 74.1 | 127 | 0 - 20 |
| Bromomethane | <LOR | 10.0 | 104 | 94 | 99 | 10.1 | 77.9 | 124 | 0 - 20 |
| Chloroethane | <LOR | 10.0 | 113 | 97.7 | 105 | 14.5 | 71.2 | 127 | 0 - 20 |
| Trichlorofluoromethane | <LOR | 10.0 | 105 | 100 | 103 | 4.88 | 74.2 | 128 | 0 - 20 |
| 1,1-Dichloroethene | <LOR | 1.0 | 104 | 99.5 | 102 | 4.42 | 76.2 | 119 | 0 - 20 |
| Iodomethane | <LOR | 1.0 | 111 | 91.3 | 101 | 19.5 | 73.3 | 131 | 0 - 20 |
| Methylene chloride | <LOR | 1.0 | 95.6 | 90.5 | 93.1 | 5.48 | 72.8 | 132 | 0 - 20 |
| trans-1,2-Dichloroethene | <LOR | 1.0 | 101 | 101 | 101 | 0 | 80.8 | 117 | 0 - 20 |
| cis-1,2-Dichloroethene | <LOR | 1.0 | 104 | 101 | 103 | 2.93 | 78.2 | 126 | 0 - 20 |
| cis-1,2-Dichloroethene | <LOR | 1.0 | 91.7 | 101 | 96.4 | 9.65 | 80.9 | 119 | 0 - 20 |
| 1,1,1-Trichloroethane | <LOR | 1.0 | 93.5 | 91.9 | 92.7 | 1.73 | 81.6 | 115 | 0 - 20 |
| 1,1-Dichloropropylene | <LOR | 1.0 | 96.1 | 96 | 96.1 | 0.1 | 77.2 | 123 | 0 - 20 |
| Carbon tetrachloride | <LOR | 1.0 | 100 | 98.3 | 99.2 | 1.71 | 74.9 | 127 | 0 - 20 |
| 1,2-Dichloroethane | <LOR | 1.0 | 98 | 96.9 | 97.5 | 1.13 | 81.7 | 123 | 0 - 20 |
| Trichloroethene | <LOR | 1.0 | 101 | 101 | 101 | 0 | 80.4 | 127 | 0 - 20 |
| Dibromomethane | <LOR | 1.0 | 98.1 | 91.4 | 94.8 | 7.07 | 78.9 | 125 | 0 - 20 |
| 1,1,2-Trichloroethane | <LOR | 1.0 | 96 | 88.8 | 92.4 | 7.79 | 82.1 | 123 | 0 - 20 |
| 1,3-Dichloropropane | <LOR | 1.0 | 100 | 97.8 | 98.9 | 2.22 | 80.5 | 123 | 0 - 20 |
| Tetrachloroethene | <LOR | 1.0 | 96.6 | 110 | 103 | 13 | 81.7 | 128 | 0 - 20 |
| 1,1,1,2-Tetrachloroethane | <LOR | 1.0 | 90 | 94.7 | 92.4 | 5.09 | 76.7 | 123 | 0 - 20 |
| trans-1,4-Dichloro-2-butene | <LOR | 1.0 | 81.1 | 101 | 91.1 | 21.9 | 73.8 | 123 | 0 - 20 |
| cis-1,4-Dichloro-2-butene | <LOR | 1.0 | 109 | 96.5 | 103 | 12.2 | 64.3 | 133 | 0 - 20 |
| 1,1,2,2-Tetrachloroethane | <LOR | 1.0 | 91.6 | 98.6 | 95.1 | 7.36 | 77.9 | 129 | 0 - 20 |
| 1,2,3-Trichloropropane | <LOR | 1.0 | 95.8 | 93.4 | 94.6 | 2.54 | 71.9 | 128 | 0 - 20 |
| Pentachloroethane | <LOR | 1.0 | 101 | 84.8 | 92.9 | 17.4 | 65.3 | 136 | 0 - 20 |
| 1,2-Dibromo-3-chloropropane | <LOR | 1.0 | 93 | 102 | 97.5 | 9.23 | 76.3 | 123 | 0 - 20 |
| Hexachlorobutadiene | <LOR | 1.0 | 95.4 | 92.8 | 94.1 | 2.76 | 73.9 | 122 | 0 - 20 |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS480
 MATRIX : Soils
 ANALYST: A.ROSSI

| COMPOUND | LOR | QC DUPLICATE RESULTS | | RPD | |
|-----------------------------------|-------|----------------------|-------------|-----|-------------|
| | | NZ523
3 | NZ523
3D | RPD | Cont. Limit |
| | mg/kg | mg/kg | mg/kg | % | |
| EP-074A-SS : Monocyclic Aromatics | | | | | |
| Benzene | 0.1 | <LOR | <LOR | n/a | |
| Toluene | 0.1 | <LOR | <LOR | n/a | |
| Ethylbenzene | 0.1 | <LOR | <LOR | n/a | |
| m & p-Xylene | 0.1 | <LOR | <LOR | n/a | |
| Styrene | 0.1 | <LOR | <LOR | n/a | |
| o-Xylene | 0.1 | <LOR | <LOR | n/a | |
| Isopropylbenzene | 0.1 | <LOR | <LOR | n/a | |
| n-Propylbenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,3,5-Trimethylbenzene | 0.1 | <LOR | <LOR | n/a | |
| sec-Butylbenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2,4-Trimethylbenzene | 0.1 | <LOR | <LOR | n/a | |
| tert-Butylbenzene | 0.1 | <LOR | <LOR | n/a | |
| p-Isopropyltoluene | 0.1 | <LOR | <LOR | n/a | |
| n-Butylbenzene | 0.1 | <LOR | <LOR | n/a | |
| EP-074B-SS : Oxygenated Compounds | | | | | |
| 2-Propanone(Acetone) | — | <LOR | <LOR | n/a | |
| Vinyl acetate | 1 | <LOR | <LOR | n/a | |
| 2-Butanone (MEK) | 1 | <LOR | <LOR | n/a | |
| 4-Methyl-2-pentanone (MIBK) | 1 | <LOR | <LOR | n/a | |
| 2-Hexanone (MBK) | 1 | <LOR | <LOR | n/a | |
| EP-074C-SS : Sulfonated Compounds | | | | | |
| Carbondisulfide | 0.5 | <LOR | <LOR | n/a | |
| EP-07D-SS : Fumigants | | | | | |
| 2,2-Dichloropropane | 0.1 | <LOR | <LOR | n/a | |
| 1,2-Dichloropropane | 0.1 | <LOR | <LOR | n/a | |
| cis-1,3-Dichloropropene | 0.2 | <LOR | <LOR | n/a | |
| trans-1,3-Dichloropropene | 0.2 | <LOR | <LOR | n/a | |
| 1,2-Dibromoethane | 0.1 | <LOR | <LOR | n/a | |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS480
 MATRIX : Soils
 ANALYST: A.ROSSI

| COMPOUND | LOR
mg/kg | QC DUPLICATE RESULTS | | RPD | |
|--|--------------|----------------------|-------------|-----|-------------|
| | | NZ523
3 | NZ523
3D | RPD | Cont. Limit |
| | | mg/kg | mg/kg | | % |
| EP-074E-SS: Chlorinated Aliphatic Compounds: | | | | | |
| Dichlorodifluoromethane | 1 | <LOR | <LOR | n/a | |
| Chloromethane | 1 | <LOR | <LOR | n/a | |
| Vinyl chloride | 1 | <LOR | <LOR | n/a | |
| Bromomethane | 1 | <LOR | <LOR | n/a | |
| Chloroethane | 1 | <LOR | <LOR | n/a | |
| Trichlorofluoromethane | 1 | <LOR | <LOR | n/a | |
| 1,1-Dichloroethene | 0.1 | <LOR | <LOR | n/a | |
| Iodomethane | 0.1 | <LOR | <LOR | n/a | |
| Methylene chloride | — | <LOR | <LOR | n/a | |
| trans-1,2-Dichloroethene | 0.1 | <LOR | <LOR | n/a | |
| 1,1-Dichloroethane | 0.1 | <LOR | <LOR | n/a | |
| cis-1,2-Dichloroethene | 0.1 | <LOR | <LOR | n/a | |
| 1,1,1-Trichloroethane | 0.1 | <LOR | <LOR | n/a | |
| 1,1-Dichloropropylene | 0.1 | <LOR | <LOR | n/a | |
| Carbon tetrachloride | 0.1 | <LOR | <LOR | n/a | |
| 1,2-Dichloroethane | 0.1 | <LOR | <LOR | n/a | |
| Trichloroethene | 0.1 | <LOR | <LOR | n/a | |
| Dibromomethane | 0.1 | <LOR | <LOR | n/a | |
| 1,1,2-Trichloroethane | 0.1 | <LOR | <LOR | n/a | |
| 1,3-Dichloropropane | 0.1 | <LOR | <LOR | n/a | |
| Tetrachloroethene | 0.1 | <LOR | <LOR | n/a | |
| 1,1,1,2-Tetrachloroethane | 0.1 | <LOR | <LOR | n/a | |
| trans-1,4-Dichloro-2-butene | 0.1 | <LOR | <LOR | n/a | |
| cis-1,4-Dichloro-2-butene | 0.1 | <LOR | <LOR | n/a | |
| 1,1,2,2-Tetrachloroethane | 0.1 | <LOR | <LOR | n/a | |
| 1,2,3-Trichloropropane | 0.1 | <LOR | <LOR | n/a | |
| Pentachloroethane | 0.5 | <LOR | <LOR | n/a | |
| 1,2-Dibromo-3-chloropropane | 0.5 | <LOR | <LOR | n/a | |
| Hexachlorobutadiene | 0.1 | <LOR | <LOR | n/a | |

ALS EP-074 : Volatile Organic Compounds

QC LOT No.: NVSCS480
MATRIX: Soils

ANALYST A.ROSSI

| COMPOUND | Blank | Spike | SPIKE QC RESULTS | | | | Control Limits | | |
|----------|-------|-------|------------------|------|---------|-----|----------------|------|-----|
| | Conc | Level | SCS | DCS | Average | RPD | Rec. | | RPD |
| | mg/kg | mg/kg | Rec. | Rec. | Rec. | % | Low | High | % |

EP-074F-SS : Chlorinated Aromatic Compounds:

| | | | | | | | | | |
|------------------------|------|-----|------|------|------|------|------|-----|--------|
| Chlorobenzene | <LOR | 1.0 | 98.8 | 98.3 | 98.6 | 0.51 | 83.6 | 121 | 0 - 20 |
| Bromobenzene | <LOR | 1.0 | 94.2 | 97.7 | 96 | 3.65 | 85.1 | 119 | 0 - 20 |
| 2-Chlorotoluene | <LOR | 1.0 | 94.6 | 96.8 | 95.7 | 2.3 | 81.1 | 117 | 0 - 20 |
| 4-Chlorotoluene | <LOR | 1.0 | 94.8 | 101 | 97.9 | 6.33 | 83.9 | 115 | 0 - 20 |
| 1,3-Dichlorobenzene | <LOR | 1.0 | 92.4 | 99 | 95.7 | 6.9 | 84.6 | 113 | 0 - 20 |
| 1,4-Dichlorobenzene | <LOR | 1.0 | 95.9 | 99.3 | 97.6 | 3.48 | 82.1 | 117 | 0 - 20 |
| 1,2-Dichlorobenzene | <LOR | 1.0 | 96.7 | 100 | 98.4 | 3.36 | 84.9 | 117 | 0 - 20 |
| 1,2,4-Trichlorobenzene | <LOR | 1.0 | 102 | 97.8 | 99.9 | 4.2 | 82.7 | 117 | 0 - 20 |
| 1,2,3-Trichlorobenzene | <LOR | 1.0 | 111 | 106 | 109 | 4.61 | 84.9 | 119 | 0 - 20 |

EP-074G-SS : Trihalomethanes

| | | | | | | | | | |
|----------------------|------|-----|------|------|------|------|------|-----|--------|
| Chloroform | <LOR | 1.0 | 96 | 99.2 | 97.6 | 3.28 | 84.6 | 116 | 0 - 20 |
| Bromodichloromethane | <LOR | 1.0 | 100 | 93.9 | 97 | 6.29 | 81.3 | 120 | 0 - 20 |
| Dibromochloromethane | <LOR | 1.0 | 92.1 | 102 | 97.1 | 10.2 | 76.2 | 130 | 0 - 20 |
| Bromoform | <LOR | 1.0 | 91.9 | 97.4 | 94.7 | 5.81 | 78.9 | 126 | 0 - 20 |

EP-074H-SS : PAH:

| | | | | | | | | | |
|-------------|------|-----|-----|-----|-----|-----|------|-----|--------|
| Naphthalene | <LOR | 1.0 | 104 | 106 | 105 | 1.9 | 86.8 | 121 | 0 - 20 |
|-------------|------|-----|-----|-----|-----|-----|------|-----|--------|

EP-074J-SS : Nitrogenated Compounds:

| | | | | | | | | | |
|---------------|---|-----|---|---|-----|-----|---|-----|--------|
| Acrylonitrile | - | 1.0 | - | - | n/a | n/a | 0 | 100 | 0 - 20 |
|---------------|---|-----|---|---|-----|-----|---|-----|--------|

EP-074S-SS: Surrogates

| | | | | | | | | | |
|-----------------------|-------|-----|------|------|------|------|----|-----|--------|
| 1,2-Dichloroethane-d4 | 94.6% | 5.0 | 101 | 104 | 103 | 2.93 | 80 | 120 | 0 - 20 |
| Toluene-d8 | 92.7% | 5.0 | 92 | 98.6 | 95.3 | 6.93 | 81 | 117 | 0 - 20 |
| 4-Bromofluorobenzene | 87.8% | 5.0 | 92.3 | 90.4 | 91.4 | 2.08 | 74 | 121 | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) * : Recovery or RPD falls outside of the recommended control limits.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No.: NVSCS480
 MATRIX : Soils
 ANALYST: A.ROSSI

| COMPOUND | LOR | QC DUPLICATE RESULTS | | RPD | |
|------------------------------------|-------|----------------------|-------|-----|-------------|
| | | NZ523 | NZ523 | RPD | Cont. Limit |
| | | 2 | 2D | | |
| | mg/kg | mg/kg | mg/kg | % | |
| EP-074A-SS : Monocyclic Aromatics: | | | | | |
| Benzene | 0.1 | <LOR | <LOR | n/a | |
| Toluene | 0.1 | <LOR | <LOR | n/a | |
| Ethylbenzene | 0.1 | <LOR | <LOR | n/a | |
| m & p-Xylene | 0.1 | <LOR | <LOR | n/a | |
| Styrene | 0.1 | <LOR | <LOR | n/a | |
| o-Xylene | 0.1 | <LOR | <LOR | n/a | |
| Isopropylbenzene | 0.1 | <LOR | <LOR | n/a | |
| n-Propylbenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,3,5-Trimethylbenzene | 0.1 | <LOR | <LOR | n/a | |
| sec-Butylbenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2,4-Trimethylbenzene | 0.1 | <LOR | <LOR | n/a | |
| tert-Butylbenzene | 0.1 | <LOR | <LOR | n/a | |
| p-Isopropyltoluene | 0.1 | <LOR | <LOR | n/a | |
| n-Butylbenzene | 0.1 | <LOR | <LOR | n/a | |
| EP-074B-SS : Oxygenated Compounds: | | | | | |
| 2-Propanone(Acetone) | — | <LOR | <LOR | n/a | |
| Vinyl acetate | 1 | <LOR | <LOR | n/a | |
| 2-Butanone (MEK) | 1 | <LOR | <LOR | n/a | |
| 4-Methyl-2-pentanone (MIBK) | 1 | <LOR | <LOR | n/a | |
| 2-Hexanone (MBK) | 1 | <LOR | <LOR | n/a | |
| EP-074C-SS : Sulfonated Compounds: | | | | | |
| Carbendisulfide | 0.5 | <LOR | <LOR | n/a | |
| EP-074D-SS : Fumigants: | | | | | |
| 2,2-Dichloropropane | 0.1 | <LOR | <LOR | n/a | |
| 1,2-Dichloropropane | 0.1 | <LOR | <LOR | n/a | |
| cis-1,3-Dichloropropene | 0.2 | <LOR | <LOR | n/a | |
| trans-1,3-Dichloropropene | 0.2 | <LOR | <LOR | n/a | |
| 1,2-Dibromoethane | 0.1 | <LOR | <LOR | n/a | |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS480
 MATRIX : Soils
 ANALYST : A.ROSSI

| COMPOUND | LOR | QC DUPLICATE RESULTS | | RPD | |
|----------|-----|----------------------|-------|-----|-------------|
| | | NZ523 | NZ523 | RPD | Cont. Limit |
| | | 2 | 2D | | |
| | | mg/kg | mg/kg | | |
| | | | | % | |

EP-074E-SS : Chlorinated Aliphatic Compounds:

| | | | | | |
|-----------------------------|-----|------|------|-----|--|
| Dichlorodifluoromethane | 1 | <LOR | <LOR | n/a | |
| Chloromethane | 1 | <LOR | <LOR | n/a | |
| Vinyl chloride | 1 | <LOR | <LOR | n/a | |
| Bromomethane | 1 | <LOR | <LOR | n/a | |
| Chloroethane | 1 | <LOR | <LOR | n/a | |
| Trichlorofluoromethane | 1 | <LOR | <LOR | n/a | |
| 1,1-Dichloroethene | 0.1 | <LOR | <LOR | n/a | |
| Iodomethane | 0.1 | <LOR | <LOR | n/a | |
| Methylene chloride | — | <LOR | <LOR | n/a | |
| trans-1,2-Dichloroethene | 0.1 | <LOR | <LOR | n/a | |
| 1,1-Dichloroethane | 0.1 | <LOR | <LOR | n/a | |
| cis-1,2-Dichloroethene | 0.1 | <LOR | <LOR | n/a | |
| 1,1,1-Trichloroethane | 0.1 | <LOR | <LOR | n/a | |
| 1,1-Dichloropropylene | 0.1 | <LOR | <LOR | n/a | |
| Carbon tetrachloride | 0.1 | <LOR | <LOR | n/a | |
| 1,2-Dichloroethane | 0.1 | <LOR | <LOR | n/a | |
| Trichloroethene | 0.1 | <LOR | <LOR | n/a | |
| Dibromomethane | 0.1 | <LOR | <LOR | n/a | |
| 1,1,2-Trichloroethane | 0.1 | <LOR | <LOR | n/a | |
| 1,3-Dichloropropane | 0.1 | <LOR | <LOR | n/a | |
| Tetrachloroethene | 0.1 | <LOR | <LOR | n/a | |
| 1,1,1,2-Tetrachloroethane | 0.1 | <LOR | <LOR | n/a | |
| trans-1,4-Dichloro-2-butene | 0.1 | <LOR | <LOR | n/a | |
| cis-1,4-Dichloro-2-butene | 0.1 | <LOR | <LOR | n/a | |
| 1,1,2,2-Tetrachloroethane | 0.1 | <LOR | <LOR | n/a | |
| 1,2,3-Trichloropropane | 0.1 | <LOR | <LOR | n/a | |
| Pentachloroethane | 0.5 | <LOR | <LOR | n/a | |
| 1,2-Dibromo-3-chloropropane | 0.5 | <LOR | <LOR | n/a | |
| Hexachlorobutadiene | 0.1 | <LOR | <LOR | n/a | |

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS480
 MATRIX : Soils
 ANALYST: A.ROSSI

| COMPOUND | LOR
mg/kg | QC DUPLICATE RESULTS | | RPD | |
|--|--------------|----------------------|-------------|------|-------------|
| | | NZ523
2 | NZ523
2D | RPD | Cont. Limit |
| | | mg/kg | mg/kg | | % |
| EP-074F-SS : Chlorinated Aromatic Compounds: | | | | | |
| Chlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| Bromobenzene | 0.1 | <LOR | <LOR | n/a | |
| 2-Chlorotoluene | 0.1 | <LOR | <LOR | n/a | |
| 4-Chlorotoluene | 0.1 | <LOR | <LOR | n/a | |
| 1,2-Dichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,4-Dichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,3-Dichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2,4-Trichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2,3-Trichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| EP-074G-SS : Trihalomethanes: | | | | | |
| Chloroform | 0.1 | <LOR | <LOR | n/a | |
| Bromodichloromethane | 0.1 | <LOR | <LOR | n/a | |
| Dibromochloromethane | 0.1 | <LOR | <LOR | n/a | |
| Bromoform | 0.1 | <LOR | <LOR | n/a | |
| EP-074H-SS : PAH: | | | | | |
| Naphthalene | 5 | <LOR | <LOR | n/a | |
| EP-074J-SS : Nitrogenated Compounds: | | | | | |
| Acrylonitrile | — | — | — | n/a | |
| EP-074S-SS : Surrogates | | | | | |
| 1,2-Dichloroethane-d4 | 1% | 79.6% | 82.9% | 4.06 | 0 - 20 |
| Toluene-d8 | 1% | 81.7% | 83.2% | 1.82 | 0 - 20 |
| 4-Bromofluorobenzene | 1% | 79% | 83.9% | 6.02 | 0 - 20 |

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-074 : Volatile Organic Compounds

QC LOT No. : NVSCS480
 MATRIX : Soils
 ANALYST: A.ROSSI

| COMPOUND | LOR | QC DUPLICATE RESULTS | | RPD | |
|--|-------|----------------------|-------|-------|-------------|
| | | NZ523 | NZ523 | RPD | Cont. Limit |
| | | 3 | 3D | | |
| | mg/kg | mg/kg | mg/kg | % | |
| EP-074F-SS : Chlorinated Aromatic Compounds: | | | | | |
| Chlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| Bromobenzene | 0.1 | <LOR | <LOR | n/a | |
| 2-Chlorotoluene | 0.1 | <LOR | <LOR | n/a | |
| 4-Chlorotoluene | 0.1 | <LOR | <LOR | n/a | |
| 1,3-Dichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,4-Dichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2-Dichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2,4-Trichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| 1,2,3-Trichlorobenzene | 0.1 | <LOR | <LOR | n/a | |
| EP-074G-SS : Trihalomethanes | | | | | |
| Chloroform | 0.1 | <LOR | <LOR | n/a | |
| Bromodichloromethane | 0.1 | <LOR | <LOR | n/a | |
| Dibromochloromethane | 0.1 | <LOR | <LOR | n/a | |
| Bromoform | 0.1 | <LOR | <LOR | n/a | |
| EP-074H-SS : PAH: | | | | | |
| Naphthalene | 5 | <LOR | <LOR | n/a | |
| EP-074J-SS : Nitrogenated Compounds: | | | | | |
| Acrylonitrile | - | - | - | n/a | |
| EP-074S-SS : Surrogates: | | | | | |
| 2-Dichloroethane-d4 | 1% | 79.9% | 83.5% | 4.41 | 0 - 20 |
| Toluene-d8 | 1% | 82.6% | 82.8% | 0.242 | 0 - 20 |
| 4-Bromofluorobenzene | 1% | 82.2% | 100% | 19.5 | 0 - 20 |

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:
 Result < 10 times LOR, no limit.
 Result between 10 and 20 times LOR, 0% - 50%.
 Results > 20 times LOR, 0% - 20%.

| BATCH QUALITY CONTROL - MATRIX SPIKE/DUPLICATE | | | | | | | |
|---|----------------|-------------|------------------|----------|--------------|-------|-------------|
| ALS EP-074 : Volatile Organic Compounds | | | | | | | |
| QC LOT No.: | NVSCS480 | | ANALYST : | | A.ROSSI | | |
| MATRIX: | Soils | | Sample ID: | | NZ523-3 | | |
| COMPOUND | Sample Results | Spike Level | SPIKE QC RESULTS | | | | Cont. Limit |
| | | | MS Rec. | MSD Rec. | Average Rec. | RPD | RPD |
| | mg/kg | mg/kg | % | % | % | % | % |
| EP-074A-SS : Monocyclic Aromatics | | | | | | | |
| Benzene | <LOR | 2.5 | 92.1 | 101 | 96.6 | 9.22 | 0 - 35 |
| Toluene | <LOR | 2.5 | 78.5 | 77 | 77.8 | 1.93 | 0 - 35 |
| EP-074E-SS : Chlorinated Aliphatic Compounds | | | | | | | |
| 1,1-Dichloroethene | <LOR | 2.5 | 90.5 | 92.6 | 91.6 | 2.29 | 0 - 35 |
| Trichloroethene | <LOR | 2.5 | 97.6 | 95.8 | 96.7 | 1.86 | 0 - 35 |
| EP-074F-SS : Chlorinated Aromatic Compounds | | | | | | | |
| Chlorobenzene | <LOR | 2.5 | 90.2 | 93.1 | 91.7 | 3.16 | 0 - 35 |
| EP-074S-SS : Surrogates | | | | | | | |
| 1,2-Dichloroethane-d4 | 79.9% | 5 | 82.6 | 81.4 | 82 | 1.46 | 0 - 35 |
| Toluene-d8 | 82.6% | 5 | 90.8 | 88.2 | 89.5 | 2.91 | 0 - 35 |
| 4-Bromofluorobenzene | 82.2% | 5 | 86.8 | 86 | 86.4 | 0.926 | 0 - 35 |

COMMENTS:

- 1) The RPD control limits are fixed.
- 2) *: RPD falls outside the recommended control limit.

| BATCH QUALITY CONTROL -- CONTROL SPIKE/DUPLICATE | | | | | | | | | |
|--|-------|-------------|------------------|------|---------|-------------------|----------------|------|--------|
| ALS EP-076 : Polynuclear Aromatic Hydrocarbons | | | | | | | | | |
| QC LOT No. : | | NEP076S-550 | | | | ANALYST ALICE TAT | | | |
| MATRIX: | | Soils | | | | | | | |
| COMPOUND | Blank | Spike | SPIKE QC RESULTS | | | | Control Limits | | |
| | Conc | Level | SCS | DCS | Average | RPD | Rec. | | RPD |
| | | | Rec. | Rec. | Rec. | | | | |
| | mg/kg | mg/kg | % | | % | % | Low | High | % |
| EP-076A : Polynuclear Aromatic Hydrocarbons | | | | | | | | | |
| Naphthalene | <0.25 | 4.0 | 88.7 | 89.8 | 89.3 | 1.23 | 77.6 | 124 | 0 - 20 |
| Acenaphthylene | <0.25 | 4.0 | 89.5 | 89.9 | 89.7 | 0.45 | 74 | 124 | 0 - 20 |
| Acenaphthene | <0.25 | 4.0 | 88.7 | 97.1 | 92.9 | 9.04 | 77 | 120 | 0 - 20 |
| Fluorene | <0.25 | 4.0 | 86.7 | 89.4 | 88.1 | 3.07 | 72.8 | 124 | 0 - 20 |
| Phenanthrene | <0.25 | 4.0 | 91.1 | 91.5 | 91.3 | 0.44 | 73.8 | 125 | 0 - 20 |
| Anthracene | <0.25 | 4.0 | 88.7 | 89.2 | 89 | 0.56 | 83.5 | 116 | 0 - 20 |
| Fluoranthene | <0.25 | 4.0 | 92.1 | 91.7 | 91.9 | 0.44 | 73.6 | 128 | 0 - 20 |
| Pyrene | <0.25 | 4.0 | 93 | 93.7 | 93.4 | 0.75 | 71.7 | 130 | 0 - 20 |
| Benzo(a)anthracene | <0.25 | 4.0 | 93.1 | 94.1 | 93.6 | 1.07 | 66.3 | 125 | 0 - 20 |
| Chrysene | <0.25 | 4.0 | 95.3 | 94.9 | 95.1 | 0.42 | 85.2 | 122 | 0 - 20 |
| Benzo(b)fluoranthene | <0.25 | 4.0 | 91.8 | 95.3 | 93.6 | 3.74 | 65 | 122 | 0 - 20 |
| Benzo(k)fluoranthene | <0.25 | 4.0 | 89.4 | 89.7 | 89.6 | 0.34 | 78.7 | 125 | 0 - 20 |
| Benzo(a)pyrene | <0.25 | 4.0 | 91 | 92.5 | 91.8 | 1.63 | 70.1 | 122 | 0 - 20 |
| Indeno(1,2,4.cd)pyrene | <0.25 | 4.0 | 87.5 | 87.4 | 87.5 | 0.11 | 73.6 | 121 | 0 - 20 |
| Dibenzo(a,h)anthracene | <0.25 | 4.0 | 87.3 | 87.2 | 87.3 | 0.12 | 70.5 | 118 | 0 - 20 |
| Benzo(g,h,i)perylene | <0.25 | 4.0 | 85.3 | 86.7 | 86 | 1.63 | 68.1 | 127 | 0 - 20 |
| EP-076S : PAH Surrogates | | | | | | | | | |
| 2-Fluorobiphenyl | 80% | 4.0 | 84.4 | 97.7 | 91.1 | 14.6 | 73.4 | 128 | 0 - 20 |
| Anthracene-d10 | 85.4% | 4.0 | 87.2 | 92.2 | 89.7 | 5.57 | 83.5 | 118 | 0 - 20 |
| 4-Terphenyl-d14 | 95.2% | 4.0 | 106 | 109 | 108 | 2.79 | 96.6 | 133 | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) * : Recovery or RPD falls outside of the recommended control limits.

| BATCH QUALITY CONTROL - MATRIX SPIKE/DUPLICATE | | | | | | | |
|--|----------------|-------------|------------------|------------|--------------|-----------|-------------|
| ALS EP-076 : Polynuclear Aromatic Hydrocarbons | | | | | | | |
| QC LOT No. : - | | NEP076S-550 | | ANALYST : | | ALICE TAT | |
| MATRIX: | | Soils | | Sample ID: | | ES33326-3 | |
| COMPOUND | Sample Results | Spike Level | SPIKE QC RESULTS | | | | Cont. Limit |
| | | | MS Rec. | MSD Rec. | Average Rec. | RPD | RPD |
| | mg/kg | mg/kg | % | % | % | % | % |
| EP-076A : Polynuclear Aromatic Hydrocarbons-- | | | | | | | |
| Acenaphthene | <0.25 | 10 | 80.6 | 91.7 | 86.2 | 12.9 | 0 - 35 |
| Pyrene | 0.683 | 10 | 72.8 | 75.8 | 74.3 | 4.04 | 0 - 35 |
| EP-076S : PAH Surrogates-- | | | | | | | |
| 2-Fluorobiphenyl | 91.6% | 4 | 90 | 97.1 | 93.6 | 7.59 | 0 - 35 |
| Anthracene-d10 | 89.7% | 4 | 84.9 | 85.4 | 85.2 | 0.587 | 0 - 35 |
| 4-Terphenyl-d14 | 99.6% | 4 | 93.6 | 93.9 | 93.8 | 0.32 | 0 - 35 |

COMMENTS:

- 1) The RPD control limits are fixed.
- 2) *: RPD falls outside the recommended control limit.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-076 : Polynuclear Aromatic Hydrocarbons

QC LOT No. : NEP076S-550
 MATRIX : Soils
 ANALYST: ALICE TAT

| COMPOUND | | QC DUPLICATE RESULTS | | RPD | |
|---|------|----------------------|---------|------|-------------|
| | | ES33326 | ES33326 | RPD | Cont. Limit |
| | | 2 | 2D | | |
| LOR
mg/kg | | mg/kg | mg/kg | % | |
| EP-076A : Polynuclear Aromatic Hydrocarbons | | | | | |
| Naphthalene | 0.25 | <0.25 | <0.25 | n/a | |
| Acenaphthylene | 0.25 | <0.25 | <0.25 | n/a | |
| Acenaphthene | 0.25 | <0.25 | <0.25 | n/a | |
| Fluorene | 0.25 | <0.25 | <0.25 | n/a | |
| Phenanthrene | 0.25 | <0.25 | <0.25 | n/a | |
| Anthracene | 0.25 | <0.25 | <0.25 | n/a | |
| Fluoranthene | 0.25 | <0.25 | <0.25 | n/a | |
| Pyrene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(a)anthracene | 0.25 | <0.25 | <0.25 | n/a | |
| Chrysene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(b)fluoranthene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(k)fluoranthene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(a)pyrene | 0.25 | <0.25 | <0.25 | n/a | |
| Indeno(1,2,4,cd)pyrene | 0.25 | <0.25 | <0.25 | n/a | |
| Dibenzo(a,h)anthracene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(g,h,i)perylene | 0.25 | <0.25 | <0.25 | n/a | |
| EP-076S : PAH Surrogates | | | | | |
| 2-Fluorobiphenyl | 1% | 95% | 88.7% | 6.86 | 0 - 20 |
| Anthracene-d10 | 1% | 95.1% | 88.3% | 7.42 | 0 - 20 |
| Perphenyl-d14 | 1% | 108% | 97.3% | 10.4 | 0 - 20 |

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

BATCH QUALITY CONTROL - DUPLICATE

ALS EP-076 : Polynuclear Aromatic Hydrocarbons

QC LOT No.: NEP076S-550
 MATRIX : Soils
 ANALYST: ALICE TAT

| COMPOUND | LOR
mg/kg | QC DUPLICATE RESULTS | | RPD | |
|---|--------------|----------------------|---------------|------|-------------|
| | | ES33326
3 | ES33326
3D | RPD | Cont. Limit |
| | | mg/kg | mg/kg | % | |
| EP-076A : Polynuclear Aromatic Hydrocarbons | | | | | |
| Naphthalene | 0.25 | <0.25 | <0.25 | n/a | |
| Acenaphthylene | 0.25 | <0.25 | <0.25 | n/a | |
| Acenaphthene | 0.25 | <0.25 | 0.458 | 200 | No limit |
| Fluorene | 0.25 | <0.25 | 0.336 | 200 | No limit |
| Phenanthrene | 0.25 | 0.309 | 0.842 | 92.6 | No limit |
| Anthracene | 0.25 | <0.25 | <0.25 | n/a | |
| Fluoranthene | 0.25 | 0.71 | 0.839 | 16.7 | No limit |
| Pyrene | 0.25 | 0.683 | 0.734 | 7.2 | No limit |
| Benzo(a)anthracene | 0.25 | 0.271 | 0.349 | 25.2 | No limit |
| Benzysene | 0.25 | 0.372 | 0.451 | 19.2 | No limit |
| Benzo(h)fluoranthene | 0.25 | 0.466 | 0.524 | 11.7 | No limit |
| Benzo(k)fluoranthene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(a)pyrene | 0.25 | 0.285 | 0.337 | 16.7 | No limit |
| Indeno(1,2,4.cd)pyrene | 0.25 | <0.25 | <0.25 | n/a | |
| Dibenzo(a,h)anthracene | 0.25 | <0.25 | <0.25 | n/a | |
| Benzo(g,h,i)perylene | 0.25 | <0.25 | <0.25 | n/a | |
| EP-076S : PAH Surrogates | | | | | |
| 2-Fluorobiphenyl | 1% | 91.6% | 89.8% | 1.98 | 0 - 20 |
| Anthracene-d10 | 1% | 89.7% | 88% | 1.91 | 0 - 20 |
| 4-Terphenyl-d14 | 1% | 99.6% | 98.3% | 1.31 | 0 - 20 |

Note: The permitted range for RPD (relative percent deviation) is specified in ALS Method QWI-EN/38 and is dependent on the magnitude of results in comparison to the level of reporting:

Result < 10 times LOR, no limit.

Result between 10 and 20 times LOR, 0% - 50%.

Results > 20 times LOR, 0% - 20%.

774

HCA - Envirosciences Pty Limited - Newcastle

18 Warabrook Blvd

Tel: 61 2 4968 0044

PO Box 73

Fax: 61 2 4988 0005

HRMC NSW 2310 Australia

E-mail: mail@hla-enviro.com.au

Sampled By: RACHAEL CASSON

HLA Project No: J1938/1

Project Name;

Project Name: HOMEBOSH

PO No. 119255

Specifications:

1. Urgent TAT required? (please circle): 24hr 48hr _____ days
2. Fast TAT Guarantee Required?
3. Is any sediment layer present in waters to be excluded from extractions?
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?
5. Special storage requirements? (details): _____
6. Shall Quality Partnership:

7. Report Format: ☐ Fax ☐ Hardcopy ☐ Email: _____

| Lab. ID | Sample ID | Sampling | | Matrix | | | Preservation | | | | Container
(No. & type) | BTEX + | Metals* | PAH's | OCP | OPP | PCB | SVOC | VOC | TPH | Lead | TCLP He | TCLP PA | Phenols | VHC | Speciate | Cyanide | Heavy ID |
|---------|--------------|----------|--|--------|-------|-------|--------------|------|-----|-------|------------------------------------|--------|---------|-------|-----|-----|-----|------|-----|-----|------|---------|---------|---------|-----|----------|---------|----------|
| | | Date | | soil | water | other | lifted | acid | ice | other | | | | | | | | | | | | | | | | | | |
| • | BH04-0-0.2 | 13/5/2 | | X | | | | | | X | 1 x 250 ml glass jar with addition | X | | | | | | | | | | | | | | | X | |
| • | BH04-0-4-0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH05-0-0.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH05-0.4-0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH05-1.8-2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH05-2.4-2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH05-2.8-3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH06-0-0.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH06-0.4-0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH06-2.8-3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH06-3-3.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH07-0-0.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| • | BH07-0.9-1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | X |

Which Reported: Pb, Cu, Ni, Cr, Cd, Co, Mn, Fe, Zn, Hg

Comments:

...

Relinquished by: R. J. J. J.

Slotted:

Relinquished by: **K. HASS**

Slotted:

Relinquished by: **K. HASS**

Slotted:

Relinquished by: **K. HASS**

Slotted:

Relinquished by: **K. HASS**

CHAIN OF CUSTODY

18 Warabrook Blvd
 PO Box 73
 IIRMC NSW 2310 Australia
 Tel: 61 2 4968 0044
 Fax: 61 2 4968 0005
 E-mail: mail@hla-enviro.com.au

Lab Details
 Lab Name: ALS
 Lab Address:
 Contact Name:
 Lab Ref:

Tel:
 Fax:
 Preliminary Report by:
 Final Report by:
 Lab Quote No:

Sampled By: **RACHAEL CASSON**
 HLA Project No: **J1938/1**

Project Name: **HOMERUSA**
 PO No: **119255**

Specifications:

1. Urgent TAT required? (please circle): 24hr 48hr days
2. Fast TAT Guarantee Required?
3. Is any sediment layer present in waters to be excluded from extractions?
4. % extraneous material removed from samples to be reported as per NEPM 6.1.1?
5. Special storage requirements? (details:)
6. Shelf Quality Partnership:
7. Report Format: ☐ Fax ☐ Hardcopy ☐ Email:

Analysis Request

| Analysis Request | Yes (tick) |
|-------------------|------------|
| Metals* | XX |
| PAH's | XX |
| OCF | |
| OPF | |
| PCB | |
| SVOC | |
| VOC | |
| TPH | |
| Lead | |
| TCLP Heavy Metals | |
| TCLP PAH's | |
| Phenols (Total) | X |
| VHC | |
| Speciated TPH | |
| Other | |

| Lab. ID | Sample ID | Sampling Date | Matrix | Preservation | Container |
|--------------|-----------|---------------|------------------|--------------|--------------------------------|
| | | | soil water other | acid base | (No. & type) |
| BH07-2.9-3.0 | | 13/5/2 | X | | 1 x 250ml glass jar with label |
| BH08-0-0.3 | | | | | |
| BH08-0.8-1.0 | | | | | |
| BH08-1.7-1.9 | | | | | |
| BH09-0-0.3 | | | | | |
| BH09-0.8-1.0 | | | | | |
| BH09-2.9-3.0 | | | | | |
| BH10-0-0.3 | | | | | |
| BH10-0.8-1.0 | | | | | |
| BH10-1.8-2.0 | | | | | |
| BH10-2.7-2.9 | | | | | |
| BH11-0-0.3 | | | | | |
| BH11-0.8-1.0 | | | | | |

As Cd Cr Cu Ni Pb Zn Hg
 * Analysis requires duplicate subsamples (not required)

Comments:

Relinquished by: **R. CASSON**
 Field Worksheet 025 (Incl. 2001)

Signed: **[Signature]**
 Date: 14/5/2

Relinquished by:
 Signed:

Lab Report No.
 Entry ID

Date:

1 of 7

CHAIN OF CUSTODY

HLA - Envisciences Pty Limited

55 65 Grandview Street

PO Box 726

Pyrmont NSW 2073 Australia

Tel: 61 2 9988 4422

Fax: 61 2 9988 4441

E-mail: mail@syd.hla-enviro.com.au

Laboratory Details

Lab. Name:

Lab. Address:

Contact Name:

Lab. Ref:

Tel:

Fax:

Preliminary Report by:

Final Report by:

Lab Quote No:

Sampled By: RACHAEL CASSON

HLA Project No: 51938/1

Specifications:

Project Name: HOMER08H

PO No. 119255

Yes (tick)

Analysis Request

| Analysis Request | | | | | | | | | | | Other |
|--|--|--|--|--|--|--|--|--|--|--|-------|
| Yes (tick) | | | | | | | | | | | Other |
| 1 Urgent TAT required? (please circle: 24hr 48hr days) | | | | | | | | | | | |
| 2 Fast TAT Guarantee Required? | | | | | | | | | | | |
| 3 Is any sediment layer present in waters to be excluded from extractions? | | | | | | | | | | | |
| 4 % extraneous material removed from samples to be reported as per NEPM 5.1.1? | | | | | | | | | | | |
| 5 Special storage requirements? (details:) | | | | | | | | | | | |
| 6 Shell Quality Partnership: | | | | | | | | | | | |
| 7 Report Format: Fax Hardcopy Email: | | | | | | | | | | | |
| Lab. ID | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | |
| Sampling Date | | | | | | | | | | | |
| Matrix | | | | | | | | | | | |
| Preservation | | | | | | | | | | | |
| Container (No. & type) | | | | | | | | | | | |
| BTEX + TPH | | | | | | | | | | | |
| Metals* | | | | | | | | | | | |
| PAH's | | | | | | | | | | | |
| OCP | | | | | | | | | | | |
| OPP | | | | | | | | | | | |
| PCB | | | | | | | | | | | |
| SVOC | | | | | | | | | | | |
| VOC | | | | | | | | | | | |
| TPH | | | | | | | | | | | |
| Lead | | | | | | | | | | | |
| TCLP Heavy Metals | | | | | | | | | | | |
| TCLP PAH's | | | | | | | | | | | |
| Phenols (TOTALS) | | | | | | | | | | | |
| VHC | | | | | | | | | | | |
| Speciated TPH | | | | | | | | | | | |
| Hold | | | | | | | | | | | |

| | |
|-----------------|--------|
| BH011 - 1.8-2.0 | 13/5/2 | |
|-----------------|--------|

Not Required (Delete element not req)

As Cd Cr Cu Ni Pb Zn Hg

Prepared by: RACHAEL CASSON

Signature:

Comments:

HLA - Envirosciences Ply Limited

55 65 Grandview Street

927 xnp (i-1

Pymble NSW 2073 Australia

Tel: 612 9988 4422

Fax: 612 9988 4441

E-mail: matl@syd.hla-enviro.com.au

Sampled By: RACHAEL CASSON

HLA Project No: T9387

Specifications:

1) Urgent TAT required? (please circle: 24hr 48hr _____ days)

2 Fast TAT Guarantee Required?

3 Is any sediment layer present in waters to be excluded from extractions?

% extraneous material removed from samples to be reported as per NEPM 6.1.12

Special storage requirements? (details:

Steel Quality Partnership:

| | | | |
|----------------|-----|----------|--------|
| Report Format: | Fax | Hardcopy | Email: |
|----------------|-----|----------|--------|

[illegible]

RECEIVED
10 JUN 2002



ALS Environmental

CERTIFICATE OF ANALYSIS

CONTACT: MS RACHAEL CASSON
CLIENT: HLA-ENVIROSCIENCES PTY LTD
ADDRESS: P O BOX 726
PYMBLE NSW 2073

BATCH: ES33677
SUB BATCH: 0
LABORATORY: SYDNEY
DATE RECEIVED: 24/05/2002
DATE COMPLETED: 31/05/2002
SAMPLE TYPE: SOIL
No. of SAMPLES: 4

ORDER No.: 119242

PROJECT:

COMMENTS

Cr6+ determined on a 1:5 soil/water extract. Results reported on a dry weight basis. LOR raised for sample BH02 due to high moisture content (>50%).

NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: michael.heery@alsenviro.com

Signatory

LABORATORIES

AUSTRALASIA

Sydney
Melbourne
Newcastle
Auckland

Hong Kong
Singapore
Kuala Lumpur
Bogor
Mumbai

AMERICAS

Vancouver
Santiago
Antofagasta
Lima

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CERTIFICATE OF ANALYSIS

Sub Batch: 0
Date: 31/05/2002
Client: HLA-ENVIROSCIENCES PTY LTD

Client Reference:

| METHOD | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | |
|--------|----------------------------------|-----------------|-----|-----------------------|-------|---------|---------|
| | | Date Sampled | | 1 | 2 | 3 | 4 |
| | | UNIT | LOR | BH01 | BH02 | BH08 | BH09 |
| EA-055 | Moisture Content (dried @ 103°C) | % | 0.1 | 0.9-1.0 | 0-0.2 | 0.9-1.0 | 2.8-3.0 |
| EG-050 | Hexavalent Chromium | mg/kg | 1 | 6.9 | 52.0 | 18.4 | 25.4 |
| | | | | <1 | <2 | <1 | <1 |

Batch:

ES33677

Sub Batch:

0

Date of Issue:

31/05/2002

Client:

HLA-ENVIROSCIENCES PTY LTD

Client Reference:

| METHOD | | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | |
|--------|----------------------------------|----------------------|-------------------|-----|-----------------------|-----|-----|--|--|--|--|--|
| | | | Date Sampled | | 200 | 201 | 202 | | | | | |
| | | | UNIT | LOR | METHOD | LCS | MS | | | | | |
| | | | CHECKS AND SPIKES | | | | | | | | | |
| EA-055 | Moisture Content (dried @ 103°C) | | % | 0.1 | | | | | | | | |
| EG-050 | Hexavalent Chromium | | mg/kg | 1 | | | | | | | | |
| | | | | | | | | | | | | |

CERTIFICATE OF ANALYSIS

CONTACT: MS RACHAEL CASSON
CLIENT: HLA-ENVIROSCIENCES PTY LTD
ADDRESS:
P O BOX 726
PYMBLE NSW 2073

ORDER No.: 119242
PROJECT:

BATCH: ES33677
SUB BATCH: 1
LABORATORY: SYDNEY
DATE RECEIVED: 24/05/2002
DATE COMPLETED: 31/05/2002
SAMPLE TYPE: TCLP LEACHATE
No. of SAMPLES: 7

COMMENTS

Concentrations reported are those determined on the TCLP leachate.
Extraction fluid #1 pH 4.88-4.98.

NOTES

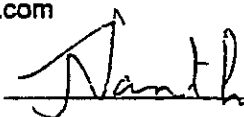
This is the Final Report and supersedes any preliminary reports with this batch number.
All pages of this report have been checked and approved for release.

ISSUING LABORATORY: SYDNEY

Address
277-289 Woodpark Road
SMITHFIELD NSW 2164

Phone: 61-2-8784 8555
Fax: 61-2-8784 8500
Email: michael.heery@alsenviro.com

Signatory



LABORATORIES

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Batch: ES33677

Sub Batch: 1

Date of Issue: 31/05/2002

Client: HLA-ENVIROSCIENCES PTY LTD

Client Reference:

CERTIFICATE OF ANALYSIS



| METH-OD | | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | | | |
|---------|--|----------------------------|-----------------|--------------|-----------------------|---------|-------|---------|---------|---------|---------|--|--|
| | | | UNIT | Date Sampled | 1 | 3 | 5 | 6 | 7 | 8 | 9 | | |
| ALS1 | | Initial pH | | | BH01 | BH08 | BH14 | BH20 | BH11 | BH15 | BH04 | | |
| ALS2 | | After HCl pH | 0.1 | | 0.9-1.0 | 0.9-1.0 | 0-0.2 | 0.1-0.3 | 3.8-4.0 | 1.8-2.0 | 0.4-0.5 | | |
| ALS3 | | Extraction Fluid Number | 0.1 | | 1.7 | --- | 1.7 | 1.7 | --- | --- | --- | | |
| ALS4 | | pH After Extract | 0.1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| EG-005C | | Arsenic - TCLP | mg/L | | 6.8 | 5.0 | 5.2 | 5.0 | 5.0 | 5.0 | 4.9 | | |
| EG-005C | | Nickel - TCLP | mg/L | | --- | <0.1 | --- | --- | --- | <0.1 | <0.1 | | |
| EG-005C | | Lead - TCLP | mg/L | | <0.1 | --- | <0.1 | <0.1 | --- | --- | --- | | |
| EG-050C | | Hexavalent Chromium - TCLP | mg/L | | <0.01 | <0.01 | --- | --- | <0.1 | <0.1 | --- | | |

Sub B
Date of issue: 31/05/2002
Client: HLA-ENVIROSCIENCES PTY LTD
Client Reference:

QUALITY CONTROL REPORT



| METHOD | | ANALYSIS DESCRIPTION | Laboratory I.D. | | SAMPLE IDENTIFICATION | | | | | | |
|-------------------|--|----------------------------|-----------------|------|-----------------------|------------|------------|------|--|--|--|
| | | | UNIT | LOR | 200 | 201 | 202 | | | | |
| | | | | | 24/05/2002 | 24/05/2002 | 24/05/2002 | | | | |
| | | | | | METHOD
BLANK | LCS | MS | | | | |
| CHECKS AND SPIKES | | | | | | | | | | | |
| ALS1 | | Initial pH | | 0.1 | --- | --- | --- | --- | | | |
| ALS2 | | After HCl pH | | 0.1 | --- | --- | --- | --- | | | |
| ALS3 | | Extraction Fluid Number | | 1 | 1 | --- | --- | --- | | | |
| ALS4 | | pH After Extract | | 0.1 | --- | --- | --- | --- | | | |
| EG-005C | | Arsenic - TCLP | mg/L | 0.1 | <0.1 | 102% | 102% | 121% | | | |
| EG-005C | | Nickel - TCLP | mg/L | 0.1 | <0.1 | 99.0% | 102% | 102% | | | |
| EG-005C | | Lead - TCLP | mg/L | 0.1 | <0.1 | 100% | 103% | 103% | | | |
| EG-050C | | Hexavalent Chromium - TCLP | mg/L | 0.01 | <0.01 | 104% | 114% | 114% | | | |

FACSIMILE TRANSMISSION

To: ALS

Attention: Nanthini

Fax Number: 8784 8500

From: Rachael Casson

Date: 22 May 2002

Subject: Additional Analysis

Project Number: Homebush - J1938

| | |
|--|---|
| Batch No.: | ☐ ORC |
| 2533677 | |
| Batched date: 24-5-02 | |
| ☒ Soil | ☒ Ambient |
| ☐ Water | ☐ Chilled |
| ☐ Other | °C |
| ☐ Subcontract Work | |
| ☐ Bottle Return | |
| ☐ Imm. Anal. Actioned | |
| 9x jars | |

Number of pages (including this cover sheet): 3

Documents faxed in this transmission to follow by mail: No

Message:

Nanthini,

Could you please arrange for the following additional analysis for ALS project ES33505 to be undertaken:

- Hexavalent Chromium for BH01^① 0.9-1.0, BH02^② 0-0.2, BH08^③ 0.9-1.0 and BH09^④ 2.8-3.0;
- TCLP - Nickel for BH01^① 0.9-1.0, BH14^⑤ 0-0.2 and BH20^⑥ 0.1-0.3;
- TCLP - Lead for BH01^① 0.9-1.0, BH11^⑦ 3.8-4.0 and BH15^⑧ 1.8-2.0;
- TCLP - Arsenic for BH04^⑨ 0.4-0.5, BH08^③ 0.9-1.0 and BH15^⑧ 1.8-2.0; and
- TCLP - Chromium IV for BH01^① 0.9-1.0 and BH08^③ 0.9-1.0.

- ① BH01 0.9-1.0
- ② BH02 0-0.2
- ③ BH08 0.9-1.0
- ④ BH09 2.8-3.0
- ⑤ BH14 0-0.2
- ⑥ BH20 0.1-0.3
- ⑦ BH11 3.8-4.0
- ⑧ BH15 1.8-2.0
- ⑨ BH04 0.4-0.5

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HLA-Envirosciences Pty Limited
 ACN 060 204 702
 Level 2, 55-65 Grandview Street
 Pymble NSW 2073

PH (02) 9988 4422
 FAX (02) 9988 4441



Sample Receipt Notice

Please Specify Quotation Number!

Laboratory Report: 012159

Client Name: HLA - Envirosiences Pty Limited
Project Name: Homebush
Project Number: J1938/1
Contact Name: Rachael Casson
Chain of Custody: 119238
Sample Matrix: SOIL

Quotation Number: na
Date Received: 20/05/2002
Fax Number: 02 9988 4441

Your laboratory contact for this project is: Geoff Weir, geoffweir@labmark.com.au

Preliminary Report Due Wednesday, May 29, 2002 **No surcharge applied**

Sample Receipt:
COC received with samples. Report number and lab ID's defined on COC.
Samples received in good order.
Samples received with cooling media: Crushed ice.
Measured temperature 4.2 degrees C.
Security seals intact.
Sample container & sample integrity suitable.

Comments: Organics results by 29/05/02. Metals results by 30/05/02.

Holding Times: Date received allows for sufficient time to meet Technical Holding Times.

Preservation: Chemical preservation of samples satisfactory for requested analytes.

Important Notes: Sample Disposal of soil and water samples shall be 21 days after laboratory receipt, unless otherwise requested in writing by the client.

Subcontracted Analyses: Acid extractable metals contracted to Sydney Analytical Laboratories, NATA accreditation No.1884.



Quality, Service, Support

Final Certificate of Analysis

Laboratory Report: 012159

Cover Page 1 of 2
plus NATA Endorsed Certificate

Client Name: HLA - Envirosiences Pty Limited
Client Reference: Homebush
Contact Name: Rachael Casson
Chain of Custody: 119238
Sample Matrix: SOIL

Date Received: 20/5/02
Date Reported: 29/5/02

Laboratory DQO Summary

Result Annotation

| | | |
|------------------------------------|--------------------------|-----------------------------------|
| DQO: Data Quality Objective | s: matrix spike recovery | p: pending |
| EQL: Estimated Quantitation Limit | d: laboratory duplicate | lcs: laboratory control sample |
| <EQL: less than reported EQL value | t: laboratory triplicate | crm: certified reference material |
| --: not applicable | r: RPD | mb: method blank |

Results in this Final Certificate of Analysis are covered by NATA Accreditation 13542 (ISO 17025), unless otherwise stated.

Quality Assurance Criteria

| | | |
|------------------|--|--|
| * Accuracy: | matrix spike:
lcs, crm, method blank:
surrogate spike: | 1 in first 5-20, then 1 every 20 samples (minimum)
1 per analytical batch
surrogate addition per target organic method |
| * Precision: | laboratory duplicate:
laboratory triplicate: | 1 in first 5-10, then 1 every 10 samples (minimum)
reported when duplicate RPD values exceed acceptance criteria |
| * Holding Times: | general soils, waters: | Moisture content same day as sample extraction for analyte.
VOC's 14 days water, 14 days soil.
VAC's 14 days acidified water.
SVOC's 7 days water, 14 days soil.
Metals 6 months general elements, 28 days mercury.
TCLP extracted & analysed 14 days.
ZHE-TCLP extracted & analysed 7 days.
Refer to LabMark Preservation & THT table. |
| * Confirmation: | target organic analyses: | GC/MS, or confirmatory column. |
| * Sensitivity: | EQL: | Typically 2-5 x Method Detection Limit (MDL). |

Quality Control - Global Acceptance Criteria

| | | |
|--------------|--|---|
| * Accuracy: | spike, lcs, crm, surrogate: | General analytes 70% - 130% Recovery.
Phenol analytes 50% - 130% Recovery.
Organophosphorous Pesticide analytes 60% - 130% Recovery.
Chromium 62% - 120% Recovery. |
| * Precision: | method blank:
laboratory replicate RPD: | Not detected above 95% of the reported EQL.
0-50% (>10xEQL), 0-75% (5-10xEQL), 0-100% (<5xEQL). |



FINAL

Certificate
of Analysis

Laboratory Report: 012159

Quality Control NEPC-1999 Guideline Compliance

1. General

- A. Sample results are analysed as received. Sample results are uncorrected for matrix spike, lcs or surrogate recovery data.
- B. EQL's are matrix dependent and may be increased due to sample dilution or matrix interference.
- C. Laboratory QA/QC samples are specific from this project, and include the laboratory ID as your reference.
- D. Inter-laboratory proficiency results are available upon request. NATA accreditation details available at www.nata.asn.au.
- E. VOC spikes & surrogates added to samples during extraction, SVOC spikes & surrogates added prior to extraction.
- F. Recovery data outside of Global Acceptance Criteria is investigated and compared to Specific Acceptance Criteria derived from historical results. If recovery falls below 20% the relevant results for that compound are treated as not reliable.

2. Chain of Custody (COC) & Sample Receipt Note (SRN) Requirements:

- A. Copy of COC attached, indicating receipt signature, date and time of laboratory receipt unless noted.
- B. SRN issued to client upon sample receipt & login verification.
- C. Preservation & sampling date details specified on COC, unless noted.
- D. Sample Integrity & VTSR Holding Times verified (preservation may extend holding time, refer to preservation chart).

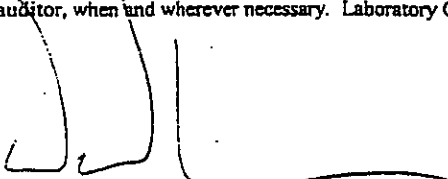
3. NATA Registered Methods

- A. NATA accreditation held for each method and sample matrix type reported, unless noted below.
- B. NATA accredited in-house laboratory methods are referenced from NEPC, modified USEPA / APHA documents.
- C. Analytical method descriptions including references appear in report body.
- D. Subcontracted analyses:
Acid extractable metals contracted by Sydney Analytical Laboratories, NATA accreditation No.1884.

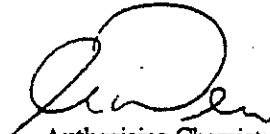
4. Additional comments specific to this report:

- A. SAL reference; SAL11914 issued on 26/05/02.

Laboratory QA/QC Self Assessment data shall relate specifically to QA/QC results as performed as part of sample analysis, and may only provide an indication of sample result quality. Acceptance of this Self Assessment certificate does not preclude any requirement for a QA/QC review by a registered contaminated site EPA auditor, when and wherever necessary. Laboratory QA/QC Self Assessment references available upon request.



Authorising Chemist:
Quality Control (NATA signatory)



Authorising Chemist:
Operations (NATA signatory)



Laboratory Report No: 012159

Client Name: HLA - EnviroSciences Pty Limited

Contact Name: Rachael Casson

Client Reference: Homebush J1938/1

Page: 1 of 2

plus cover page

Date: 29/5/02

This report supersedes reports issued on: N/A

Certificate
of Analysis
Analyst: Ivan Povolny

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The tests reported herein have been
performed in accordance with its terms of
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be reproduced except in full



No. 15642

| Laboratory Identification | | 9243 | ics | mb | | | | | |
|-------------------------------|------------------------------|----------|------|------|--|--|--|--|--|
| Sample Identification | | BH49 | QC | QC | | | | | |
| Depth (m) | | 0.6-0.75 | -- | -- | | | | | |
| Sampling Date recorded on COC | | 15/5/02 | -- | -- | | | | | |
| Laboratory Extraction Date | | 22/5/02 | -- | -- | | | | | |
| Laboratory Analysis Date | | 22/5/02 | -- | -- | | | | | |
| Method | BTEX by P&T | EQL | | | | | | | |
| E002.2 | Benzene | 0.2 | 96% | <0.2 | | | | | |
| | Toluene | 0.5 | 97% | <0.5 | | | | | |
| | Ethylbenzene | 0.5 | 95% | <0.5 | | | | | |
| | meta- and para-Xylene | 1 | 95% | <1 | | | | | |
| | ortho-Xylene | 0.5 | 93% | <0.5 | | | | | |
| | Total Xylene | -- | -- | -- | | | | | |
| | CDFB (Surr @ 10mg/kg) | 90% | 93% | 96% | | | | | |
| Method | Volatile TPH by P&T | EQL | | | | | | | |
| E003.2 | C6 - C9 Fraction | 10 | 99% | <10 | | | | | |
| Method | Petroleum Hydrocarbons (TPH) | EQL | | | | | | | |
| E006.2 | C10 - C14 Fraction | 50 | -- | <50 | | | | | |
| | C15 - C28 Fraction | 100 | 103% | <100 | | | | | |
| | C29 - C36 Fraction | 100 | -- | <100 | | | | | |
| | Sum of TPH C10 - C36 | -- | -- | -- | | | | | |

Results expressed in mg/kg (ppm) dry weight unless otherwise specified

Comments:

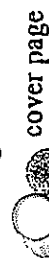
BTEX E002.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
VTPH E003.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
TPH E006.2: 8-10g soil extracted with 20ml DCM/Acetone (8:2). Analysis by GC/FID.



Client Name:



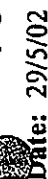
HLA - Environmental Services Pty Limited



Certification of Analysis

Contact Name:

Rachael Casson



Date: 29/5/02

Client Reference

Homebush J1938/1

This report supercedes reports issued on: N/A

| Laboratory Identification | | 9240 | 9242 | 9243 | 9243d | 9243r | crm | mb | |
|-------------------------------|-------------------------|---------|----------|----------|-------|-------|------|--------|--|
| Sample Identification | | BH06 | BH29 | BH49 | QC | QC | QC | QC | |
| Depth (m) | | 0-0.3 | 0.03-0.1 | 0.6-0.75 | -- | -- | -- | -- | |
| Sampling Date recorded on COC | | 13/5/02 | 14/5/02 | 15/5/02 | -- | -- | -- | -- | |
| Laboratory Extraction Date | | 22/5/02 | 22/5/02 | 22/5/02 | -- | -- | -- | -- | |
| Laboratory Analysis Date | | 22/5/02 | 22/5/02 | 22/5/02 | -- | -- | -- | -- | |
| Method
3050 | Acid extractable metals | EQL | | | | | | | |
| | Cadmium | 0.5 | <0.5 | <0.5 | <0.5 | -- | -- | <0.5 | |
| | Chromium | 0.5 | 11 | 14 | 16 | 13% | 67% | <0.5 | |
| | Copper | 0.5 | 26 | 9.0 | 9.5 | 5% | 108% | <0.5 | |
| | Nickel | 0.5 | 16 | 3.0 | 4.0 | 29% | 90% | <0.5 | |
| | Lead | 0.5 | 19 | 22 | 25 | 13% | 101% | <0.5 | |
| | Zinc | 0.5 | 47 | 25 | 27 | 8% | 101% | <0.5 | |
| Method
7061 | Acid extractable metals | EQL | | | | | | | |
| | Arsenic | 0.5 | 3.5 | 2.0 | 3.5 | 15% | 90% | <0.5 | |
| Method
7471 | Acid extractable metals | EQL | | | | | | | |
| | Mercury | 0.005 | 0.090 | 0.010 | 0.080 | 0.0% | 85% | <0.005 | |

Results expressed in mg/kg (ppm) dry weight unless otherwise specified

Comments:

METALS 3050: 2.5g digested in HNO3/H2O2. Analysis by Flame AAS.
METALS 7061: 2.5g digested with HNO3/H2O2/H2SO4. Analysis by HG/AAS.
METALS 7471: 1g digested with aqua regia and reduced with SnCl2. Analysis by CV/AAS.

Authorising Chemist: Ivan Povolny



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This data reported herein have been peer reviewed in accordance with its terms of accreditation. This document shall not be reproduced except in full.

No. 13342

DISTRIBUTION

Site Contamination Assessment,
Site 3, Sydney Olympic Park Town Centre
Homebush, NSW

Sydney Olympic Park Authority (SOPA)
7 Figtree Drive,
Homebush, NSW 2127

7 June 2002

| | |
|--------------|---|
| 2.... Copies | Mr Mike Doyle
SOPA
7 Figtree Drive,
Homebush, NSW 2127 |
|--------------|---|

| | |
|----------|---------------------|
| Original | HLA Project File |
| 1 Copy | HLA Project Library |

Quality Control Reviewer

Paul McCabe
Principal Environmental Scientist



HLA-Envirosciences Pty Limited

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North Mackay QLD 4740
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Email: hlamack@mack.hla-enviro.com.au

4 December, 2001

Sydney Olympic Park Authority
Level 2, RAS Administration Building
HOMEBUSH BAY NSW 2127

Our Reference: 8010704L1

Attention: Mr Paul Culshaw / Mr Con Lambous

Dear Paul and Con,



**RE: CONTAMINATION ASSESSMENT STRATEGY - SOPA TOWN
CENTRE DEVELOPMENT SITES**

Introduction

SOPA are currently reviewing development options for the 'Town Centre'. The development sites (numbered 1 to 8) are identified in 'Request for Proposals for Commercial Development' June 2001 (refer to Attachment A).

Development proposals under consideration include commercial, residential and carparking.

SOPA have requested ERM to provide advice on strategic approaches for dealing with contamination issues associated with the sites.

Background and Available Information

The SOPA town centre has been the subject of various investigations during the period of redevelopment. Readily available information relevant to the sites is limited.

Aerial photographs covering the period 1930 to 2000 show the staged redevelopment of the site from brick pit and abattoir with associated facilities to the current SOPA Town Centre.

Borehole data for various investigations sporadically cover some of the development sites.

The readily available data reviewed relevant to the various development sites is summarised as follows:

| Site | Remediation | Available Information |
|-------|---|---|
| 1 | Southwest boundary of Brick Pit | Borehole data, Coffey Partners 1990. Boreholes indicate shallow fill (generally less than 1m with one borehole to 3m) overlying residual clay and shale.

Aerial photographs indicated sheds and/or structures on southern boundary (meat stores). |
| 2 | South of Brick Pit, to corner Parkview and Australia Avenue | No boreholes. Aerial photographs indicated site was previously holding paddocks for abattoir. No indication of filling or excavation. Anecdotal evidence that small amounts of fill placed along the old electricity easement on the western boundary of the site. |
| 3 | Adjacent to Railway | No boreholes. Aerial photographs indicated site was previously holding paddock for abattoir. Southern portion may have been affected by filling. Anecdotal evidence that small amounts of fill placed along the old electricity easement on the western boundary of the site. |
| 4 | Corner of Herb Elliott and Olympic Boulevard | No boreholes. Aerial photographs indicated that site has remained relatively unaffected by historical or recent developments. |
| 5,6,7 | Carparks between Dawn Fraser Ave and Herb Elliott Ave | One borehole near site 5 indicated 'sandy gravel' fill to 0.3m. Aerial photographs indicated the site to be holding paddocks for abattoir. No developments of note prior to current carpark. |
| 8 | Adjacent Murray Rose Ave | Borehole data, Coffey Partners 1990, indicate fill varying in depth to 1.2m (5120, 5119, 5126). Aerial photographs indicated that the site was close to structures associated with abattoirs (western end). |

Based on the review of information, the likelihood that the sites are affected by significant contamination issues will vary. Sites 1, 2, 3 and 8 have either borehole data or aerial photograph information that indicates possible fill or impacting past use. Fill is described

with building rubble and tree roots and cannot be confirmed 'clean' as the source is unknown. Sites 4, 5, 6 and 7 appear to have a low likelihood of major impact from past activity.

Possible Strategy for Handling Contamination Issues

From information provided by SOPA it is understood that a Draft Masterplan is currently being prepared by SOPA for approval by DUAP. This Masterplan will provide the Planning Instrument for Sydney Olympic Park. The relevant Planning Authority (DUAP) will assess whether the issue of contamination is relevant. This will be done using SEPP55 (Managing Land Contamination). If there is sufficient information to conclude that contamination issues can be dealt with during redevelopment and therefore will not preclude the proposed land uses, then the Masterplan may be processed with available information. If this is not the case, further investigation (either preliminary or detailed investigations) will be required. Under these circumstances a Site Audit Statement (issued under the Contaminated Land Management Act 1997) will generally be required. There has been no indication from DUAP that this will be required.

Should an assessment be required, the Site Auditor will require the investigation to proceed following current guidelines. This includes the NSW EPA Sampling Design Guidelines. The sampling requirements for the sites under these guidelines are summarised as follows (areas have been rounded up where appropriate):

| | Site | Area | Minimum No. of Sample Locations for Site Characterisation |
|-----------|------|---------------------|---|
| 2.3 ha | 1 | 3.28ha | ³⁵
45 with 95% UCL of detecting 32.9 m circular diameter hot spot |
| | 2 | 7 679m ² | 19 with 95% UCL of detecting 24.2 m circular diameter hot spot |
| 21.189 ha | 3 | 1 189m ² | ²⁵
25 with 95% UCL of detecting 28.9 m circular diameter hot spot |
| | 4 | 5 896m ² | 15 with 95% UCL of detecting 23.6 m circular diameter hot spot |
| | 5 | 5 040m ² | 13 with 95% UCL of detecting 23.1 m circular diameter hot spot |
| | 6 | 2 192m ² | 7 with 95% UCL of detecting 19.9 m circular diameter hot spot |
| | 7 | 2 900m ² | 9 with 95% UCL of detecting 21.5 m circular diameter hot spot |
| | 8 | 4 726m ² | 13 with 95% UCL of detecting 23.1 m circular diameter hot spot |

Note: UCL = Upper Confidence Limit

A more or less dense sampling density can be accepted or required by the Auditor based on available information and proposed land use. For the sites under consideration it would be reasonable to assume that, on average, the guidelines will apply.

The cost and timing to provide this additional information is estimated as follows:

| Site | No of Likely Sample Locations | Approximate Cost of Phase I & II Investigation | Approximate Cost of Audit |
|-----------------------------------|-------------------------------|--|---------------------------|
| 1 | 45 | \$35 000 | \$9 000 |
| 2 | 19 | \$20 000 | \$8 000 |
| 3 | 7 | \$10 000 <i>2000</i> | \$5 000 |
| 4 | 15 | \$18 000 | \$8 000 |
| 5 | 13 | \$18 000 | \$8 000 |
| 6 | 7 | \$10 000 | \$6 000 |
| 7 | 9 | \$11 000 | \$5 000 |
| 8 | 13 | \$18 000 | \$8 000 |
| Total Cost (excluding GST) | | \$140 000 | \$57 000 |

Note: Cost savings would eventuate if the sites were investigated and audited as one parcel.

The likely timing of the investigation is;

| | |
|-----------------|--------------|
| Tender | 3 weeks |
| Mobilise | 1 week |
| Phase I Aspects | 2 to 3 weeks |
| Fieldwork | 2 weeks |
| Report | 3 weeks |
| Audit | 2 weeks |

Total elapsed time 13 to 14 weeks.

At the conclusion of the process, each site would have;

- ☐ Investigation report
- ☐ Summary Site Audit Report
- ☐ Site Audit Statement (confirming acceptable land uses and conditions).

The information would be sufficient for a developer of the site(s) to broadly estimate costs for contamination issues identified (eg. disposal of fill to provide underground carparking) or to include any contaminated related development constraints into the proposed developments.

The options available to SOPA at this time are;

| Option | Action Required | Cost | Comments |
|---|--|---|---|
| 1. Do nothing | Provide available information to tenderers.
Provide summary of available information on contamination to DUAP for consideration of approval of Master Plan (and therefore | Minimal
\$5,000 to
\$10,000 | Tenderers will assess risk and cost accordingly.

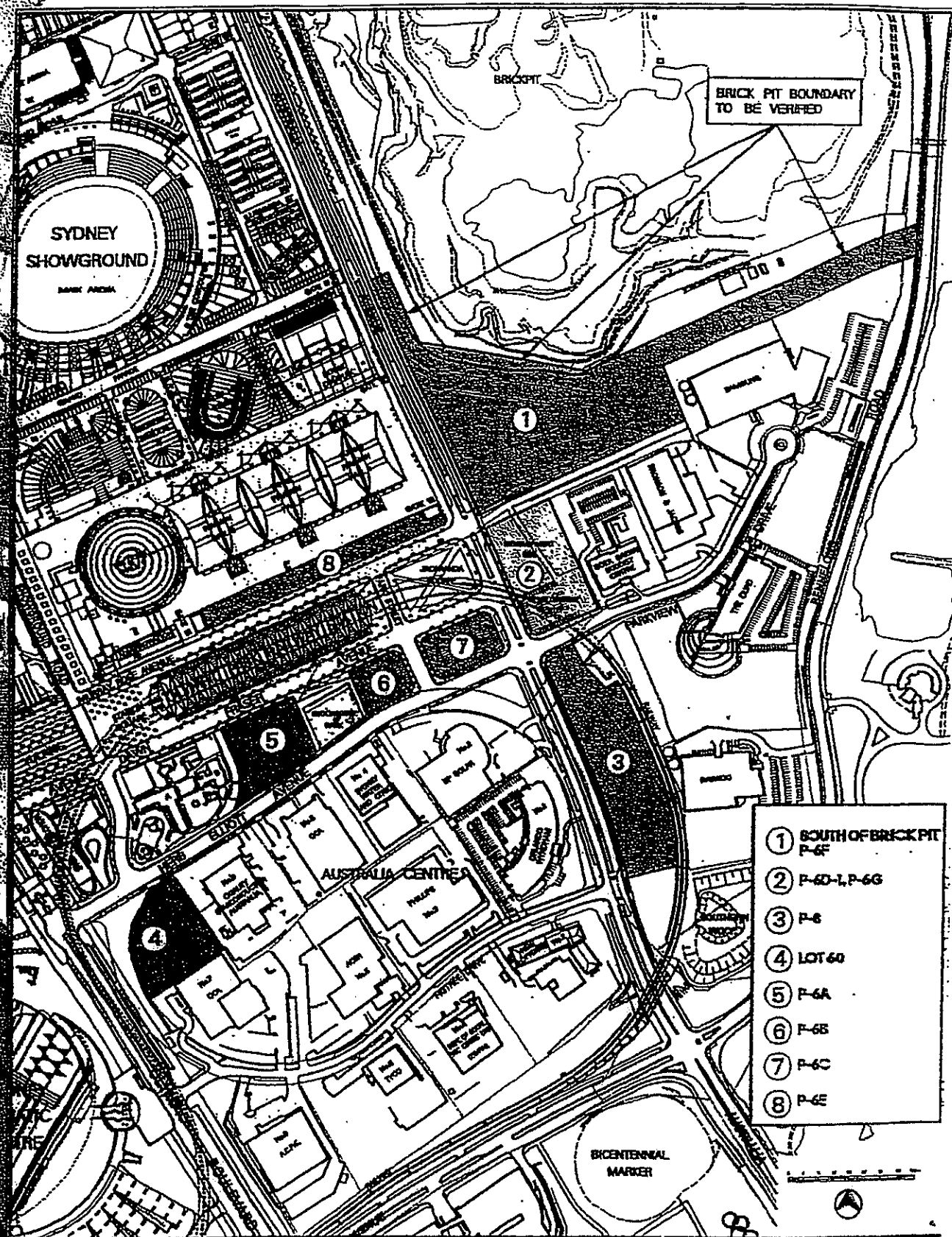
DUAP may require further information to approve zoning. |
| 2. Investigate sites and provide information to support tender process. | Investigate sites and provide Audit Statement | \$24 500 on average per site (\$196 K) and 13 weeks | Tenderers will have sufficient information to assess cost of developments. |
| 3. Supplement current information but not to detail of 2. | Investigate site (preliminary)
No Audit statement. Allow \$10 000 per site | \$80 000 | Tenderers will have less risk factored into pricing than Option 1. |
| 4. Investigate selected sites based on likelihood of contamination | Investigate sites 1, 2, 3 and 8 (preliminary investigations only, no audit statement) | \$40,000 | Tenderers will have less risk factored into pricing than Option 1. |

In summary, the 'do nothing' option is only acceptable if DUAP accept the Masterplan based on existing information. It is considered that DUAP is likely to accept this on the basis that the subsequent development would be subject to a Site Audit Statement. The investigation and Audit option provides the highest level of certainty for developers and will therefore result in lower contingency included in bids. Contractual issues associated with contamination will be less complex.

An appropriate option, given the low likelihood of contamination on Sites 4, 5, 6 and 7, would be to adopt Option 4 and carry out preliminary investigations on sites 1, 2, 3 and 8 only.

Yours sincerely,
for Environmental Resources Management Australia Pty Ltd


For Frank Mohen
Principal



SYDNEY OLYMPIC PARK AUTHORITY
 SYDNEY OLYMPIC PARK MASTERPLAN
 DEVELOPMENT SITES

DATE: 1994/05/04
 SCALE: 1:50,000

CONTAMINATION ISSUES – P3A CAR PARK and Lot 60

Peter ~~XXXX~~

Any reinstatement
issues from Gov
for Lot 60?

Don
29/

P3A CAR PARK

Site

The P3A car park is the at-grade parking area and surrounding landscaping of the P3 car park. It adjoins to the east the intersection of Olympic Boulevard and Sarah Durack Avenue. During the Olympic Games the site was used as part of the promotional, entertainment and hospitality centre called "Olympic RendezVous @ Samsung". The Kodak sponsor showcase was also located within the P3A car park, to the south of the Samsung centre.

The site is part of a former landfill, completed approximately 1977¹.

Notices

The site is subject to a notice under section 28 of the Contaminated Land Management Act 1997 (Notice no. s281998006). This notice requires Environment Protection Authority approval for any disturbance of soil below a depth of 500mm.

The site is also subject to a notice under section 5 of the Unhealthy Building Land Act 1990 (Notice no. 931). This notice prohibits erection of a structure except with the approval of the EPA.

The notices do not effect the entire site. A triangular piece of land closest to the intersection of Olympic Boulevard and Sarah Durack Avenue is not subject to the notices (see attached plan).

Contamination

Previous investigations² revealed the landfill comprises a variety of contaminants, including heavy metals (including arsenic, cadmium, chromium, copper, lead, zinc and mercury), asbestos, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons, organochloride pesticides and landfill gas (methane and other components). Gases include gases that are odourous, combustible and toxic. The fill also includes concrete, timber and steel. The thickness of the fill on the P3A car park site is approximately 1-2m. The fill is overlain or 'capped' with approximately 1.0 to 1.9m of clean soil.

Presence of screw piles

The development of the promotional centre that was on the site during the Olympic Games included the erection of 22 steel columns. The steel columns were constructed by 'screw' piling into the capping layer and landfill. Screw piling displaces minimal amounts of soil. The penetration of the landfill and capping by the screw piling required and received the approval of the Environment Protection Authority.

The determination of the promotional centre as exempt development under State Environmental Planning Policy No. 38 included advice that:

"Re-instatement works will include full removal of all screw piles and re-instatement of capping layer to the Environment Protection Authority's Satisfaction."

1. Jeffery and Katauskas, "Review of Geotechnical Aspects Proposed Avenue One Car Park Homebush Bay NSW", April 1997.
2. Dames and Moore, "Geotechnical Investigation for Homebush Bay Roads Infrastructure", April 1996.

Following the Olympic Games the matter was reviewed and a new advice issued:

"Piling may be left in place subject to the following:

- any work being in accordance with the requirements of the EPA;*
- the clay capping layer and any subsurface irrigation or other services being fully reinstated; and*
- works as executed drawings to indicate the location and depth of the piles."*

The EPA confirmed that its approval had been given on the understanding that the screw piles would remain in place.

Therefore, the piles remain in place.

There is a risk of contaminated material being disturbed and exposed if the piles are removed.

The Kodak showcase was a temporary building placed within the car park. No excavation that disturbed contaminated material was involved.

LOT 60

Site

Lot 60 is a fan shaped lot located east of the intersection of Olympic Boulevard and Herb Elliott Avenue. During the Olympic Games the site was used as a McDonalds take-away restaurant. The site is currently paved and line-marked, and used as a carpark.

Contamination

The site is not subject to any notices and there is no evidence of any contamination on the site. Soil testing was carried out on the site prior to the McDonalds development and did not reveal any contamination (*Source: Exempt development assessment report*).

Prior to the McDonalds development the site was unpaved and used as an informal car park. There will have been some minor oil and petrol leakage from vehicles, and it can be expected there has been some infiltration of the soil.

The site was excavated as part of the McDonalds development. The maximum depth of excavation was approximately 1.4m in the eastern corner of the site. No soil contamination was revealed.

Site History

An archaeological report (October 1996) identified the Australia Centre as the most likely site of "Homebush House", the original farmhouse of the area. The report recommended that any proposed earthworks within the Australia Centre (the area bounded by Figtree Drive and Australia Avenue in their original layout) be monitored by an archaeologist.

A subsequent archaeological investigation was undertaken on Lot 60 (and also on 1 Figtree Drive) in September 1997. The purpose was to attempt to obtain evidence of Homebush House. Limited excavation was carried out under a Heritage Council permit.

No archaeological evidence was found on Lot 60, some artefacts were found on '1 Figtree Drive.

The report recommended that:

- *"Initial sub-surface works preceding development in study area two [lot 60] should be archaeologically monitored.";* and
- *"Development or earth works within the general study area – Australia Avenue – Fig Tree Avenue, [sic] should be reviewed by an archaeologist on a 'by site' basis for its potential impact on the archaeological resource. As a minimum earthworks would require initial archaeological monitoring."*

When Lot 60 was part of the abattoir lands, the site was used as a sheep holding area, before the animals proceeded to the abattoir for slaughter. No contamination would be expected from this use.

UBL No. 931

