Shirley LeCornu

From: Alan Wilson <Alan.D.Wilson@ghd.com>
Sent: Monday, 17 July 2017 2:07 PM
To: Shirley LeCornu
Subject: Extra sample.

Hi Shirley.

In my rush to give samples to the courier (just been) I forgot to add on sample. Would you please add?

Qc1-170717.

Sample for ALS.

Regards, Alan.

(Currently out of the office - 0402 490 933).

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ALS Group: Click here to report this email as spam.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709378**	Page	: 1 of 2
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017 09:45
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 20-Jul-2017 14:05
Sampler	: Joshua Riley		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 4		
No. of samples analysed	: 4		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Client sample ID	**ID18-CASS05_11.0**	**ID18-CASS05_11.5**	**ID18-CASS05_12.5**	**ID18-CASS05_10.5**	**----**
			Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM1709378-001**	**EM1709378-002**	**EM1709378-003**	**EM1709378-004**	**--------**
				Result	Result	Result	Result	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**9.9**	**9.8**	**9.1**	**9.5**	**----**
pH (Fox)	----	0.1	pH Unit	**6.4**	**5.1**	**5.5**	**5.8**	**----**
Reaction Rate	----	1	-	**2**	**4**	**2**	**2**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709378**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 20-Jul-2017
Sampler	: Joshua Riley		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 4		
No. of samples analysed	: 4		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709378**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Site	: Edithvale LX	Issue Date	: 20-Jul-2017
Sampler	: Joshua Riley	No. of samples received	: 4
Order number	: 60506004.1.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18-CASS05_11.0, ID18-CASS05_11.5, ID18-CASS05_12.5, ID18-CASS05_10.5	**17-Jul-2017**	**20-Jul-2017**	13-Jan-2018	✓	**20-Jul-2017**	13-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709378**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX		
Sampler	: Joshua Riley		

Dates

Date Samples Received	: 18-Jul-2017 09:45	Issue Date	: 18-Jul-2017
Client Requested Due Date	: 25-Jul-2017	Scheduled Reporting Date	: **25-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 0.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709378-001	17-Jul-2017 00:00	ID18-CASS05_11.0	✓
EM1709378-002	17-Jul-2017 00:00	ID18-CASS05_11.5	✓
EM1709378-003	17-Jul-2017 00:00	ID18-CASS05_12.5	✓
EM1709378-004	17-Jul-2017 00:00	ID18-CASS05_10.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number: 3134145	GHD Contact: ALAN WILSON
Project: EDITHVALE - LXRA	
GHD Project Manager: JOSETH HIXSON	GHD Contact: 18/7/17
GHD PM email:	GHD Contact email:

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Duplicate Sample ID	Sample Matrix: S: Soil, SE: Sludge, W: Water, A: Air, GW: Groundwater	Container Type: J: Tpoi Jar, B: Bag, V: Vial, G: glass bottle, P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASI FIELD SCREEN	SAMPLE COMMENTS
ID18-CASS05_11.0	17/7	PM	1	S	B			✓	
11.5	↓	↓	2	↓	↓			✓	
Not rec'd → 12.0			~~3~~					✓	
SH 15/7. 12.5	↓	↓	~~4~~ 3	↓	↓			✓	
ID18-CASS05_10.5			4						

Environmental Division
Melbourne
Work Order Reference
EM1709378

Telephone : + 61-3-8549 9600

TOTAL NUMBER OF SAMPLES:	4
TOTAL NUMBER OF ESKIES:	1
SAMPLES/ESKY CHILLED? Y/N	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	Joshua Riley		18/7/17 @ 9:20
GHD SERVICE CENTRE			
COURIER	JET COURIERS	18/7/17 @ 9:20	
LABORATORY	Ramon (AM)	18/7, 9:45	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709379**	Page	: 1 of 15
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017 09:45
Order number	: 60506004.1.1	Date Analysis Commenced	: 18-Jul-2017
C-O-C number	: ----	Issue Date	: 24-Jul-2017 14:07
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 17		
No. of samples analysed	: 17		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- All jars received with significant headspace. Volatile organics may be compromised as a result.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS11_18.5	ID46CASS11_19	ID46CASS11_19.5	ID46CASS11_20	ID46CASS11_0.1
			Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709379-001	EM1709379-002	EM1709379-003	EM1709379-004	EM1709379-005
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	----	----	----	5.3
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.8	8.6	8.5	8.4	6.5
pH (Fox)	----	0.1	pH Unit	8.1	5.6	5.2	4.5	4.9
Reaction Rate	----	1	-	4	4	2	2	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1	%	----	----	----	----	4.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	<5
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Copper	7440-50-8	5	mg/kg	----	----	----	----	35
Lead	7439-92-1	5	mg/kg	----	----	----	----	50
Molybdenum	7439-98-7	2	mg/kg	----	----	----	----	5
Nickel	7440-02-0	2	mg/kg	----	----	----	----	3
Selenium	7782-49-2	5	mg/kg	----	----	----	----	<5
Silver	7440-22-4	2	mg/kg	----	----	----	----	<2
Tin	7440-31-5	5	mg/kg	----	----	----	----	<5
Zinc	7440-66-6	5	mg/kg	----	----	----	----	23
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	----	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	----	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	----	----	<40
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_18.5	ID46CASS11_19	ID46CASS11_19.5	ID46CASS11_20	ID46CASS11_0.1
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-001	EM1709379-002	EM1709379-003	EM1709379-004	EM1709379-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	----	----	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		----	----	----	----	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg		----	----	----	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		----	----	----	----	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		----	----	----	----	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		----	----	----	----	<0.01
Chloroform	67-66-3	0.02	mg/kg		----	----	----	----	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		----	----	----	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		----	----	----	----	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg		----	----	----	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		----	----	----	----	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		----	----	----	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		----	----	----	----	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		----	----	----	----	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		----	----	----	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		----	----	----	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		----	----	----	----	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		----	----	----	----	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		----	----	----	----	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		----	----	----	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		----	----	----	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		----	----	----	----	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	----	----	----	<0.03
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	----	----	----	<0.03
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	----	----	----	<0.03
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_18.5	ID46CASS11_19	ID46CASS11_19.5	ID46CASS11_20	ID46CASS11_0.1
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-001	EM1709379-002	EM1709379-003	EM1709379-004	EM1709379-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	----	----	<0.05
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	----	----	<0.03
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	----	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	----	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	----	----	<1
2-Methylphenol	95-48-7	1	mg/kg		----	----	----	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	----	<1
2-Nitrophenol	88-75-5	1	mg/kg		----	----	----	----	<1
2.4-Dimethylphenol	105-67-9	1	mg/kg		----	----	----	----	<1
2.4-Dinitrophenol	51-28-5	5	mg/kg		----	----	----	----	<5
4-Nitrophenol	100-02-7	5	mg/kg		----	----	----	----	<5
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		----	----	----	----	<5
Dinoseb	88-85-7	5	mg/kg		----	----	----	----	<5
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		----	----	----	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_18.5	ID46CASS11_19	ID46CASS11_19.5	ID46CASS11_20	ID46CASS11_0.1
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-001	EM1709379-002	EM1709379-003	EM1709379-004	EM1709379-005
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	----	**1.2**
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		----	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		----	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg		----	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		----	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg		----	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg		----	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg		----	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		----	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		----	----	----	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		----	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		----	----	----	----	<0.03
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg		----	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		----	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg		----	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		----	----	----	----	<0.03
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		----	----	----	----	<0.03
4.4`-DDT	50-29-3	0.05	mg/kg		----	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		----	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	----	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_18.5	ID46CASS11_19	ID46CASS11_19.5	ID46CASS11_20	ID46CASS11_0.1
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-001	EM1709379-002	EM1709379-003	EM1709379-004	EM1709379-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	103
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	----	----	81.8
Toluene-D8	2037-26-5	0.1	%		----	----	----	----	74.5
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	----	----	94.1
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		----	----	----	----	114
2-Chlorophenol-D4	93951-73-6	0.025	%		----	----	----	----	105
2.4.6-Tribromophenol	118-79-6	0.025	%		----	----	----	----	114
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		----	----	----	----	102
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	----	----	----	103
2-Fluorobiphenyl	321-60-8	0.025	%		----	----	----	----	116
Anthracene-d10	1719-06-8	0.025	%		----	----	----	----	127
4-Terphenyl-d14	1718-51-0	0.025	%		----	----	----	----	125

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_0.3	ID46CASS11_0.5	ID46CASS11_1	ID46CASS11_1.5	ID46CASS10_2
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-006	EM1709379-007	EM1709379-008	EM1709379-009	EM1709379-010
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.3	----	5.5	----	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		----	6.5	6.4	5.2	5.6
pH (Fox)	----	0.1	pH Unit		----	5.0	4.3	4.4	4.5
Reaction Rate	----	1	-		----	2	2	2	2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1	%		3.3	----	3.0	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	<1	----	----
Copper	7440-50-8	5	mg/kg		<5	----	<5	----	----
Lead	7439-92-1	5	mg/kg		12	----	<5	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	----	<2	----	----
Nickel	7440-02-0	2	mg/kg		<2	----	<2	----	----
Selenium	7782-49-2	5	mg/kg		<5	----	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	----	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	----	<5	----	----
Zinc	7440-66-6	5	mg/kg		9	----	<5	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		<40	----	<40	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_0.3	ID46CASS11_0.5	ID46CASS11_1	ID46CASS11_1.5	ID46CASS10_2
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-006	EM1709379-007	EM1709379-008	EM1709379-009	EM1709379-010
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	<0.4	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	<0.02	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	<0.01	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	<0.01	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	<0.02	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	<0.02	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	<0.02	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_0.3	ID46CASS11_0.5	ID46CASS11_1	ID46CASS11_1.5	ID46CASS10_2
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-006	EM1709379-007	EM1709379-008	EM1709379-009	EM1709379-010
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	<1	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	<1	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	<5	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	<5	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	<5	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_0.3	ID46CASS11_0.5	ID46CASS11_1	ID46CASS11_1.5	ID46CASS10_2
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-006	EM1709379-007	EM1709379-008	EM1709379-009	EM1709379-010
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS11_0.3	ID46CASS11_0.5	ID46CASS11_1	ID46CASS11_1.5	ID46CASS10_2
				Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-006	EM1709379-007	EM1709379-008	EM1709379-009	EM1709379-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		113	----	106	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		98.4	----	91.6	----	----
Toluene-D8	2037-26-5	0.1	%		98.1	----	86.3	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		108	----	97.5	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		117	----	99.8	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		103	----	94.0	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		112	----	87.3	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		102	----	86.3	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		104	----	91.2	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		116	----	99.9	----	----
Anthracene-d10	1719-06-8	0.025	%		121	----	108	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		126	----	108	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_2.5	ID46CASS10_3	ID46CASS10_3.5	ID46CASS10_4	ID46CASS10_4.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709379-011	EM1709379-012	EM1709379-013	EM1709379-014	EM1709379-015
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.4**	**5.1**	**4.8**	**4.7**	**4.7**
pH (Fox)	----	0.1	pH Unit		**4.3**	**4.0**	**4.1**	**4.4**	**4.4**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS10_5	ID46CASS10_4.2	----	----	----
			Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1709379-016	EM1709379-017	--------	--------	--------
				Result	Result	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**4.7**	**4.3**	**----**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**4.3**	**4.2**	**----**	**----**	**----**
Reaction Rate	----	1	-	**1**	**1**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709379**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
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E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 18-Jul-2017 09:45
Order number	: 60506004.1.1	Date Analysed	: 18-Jul-2017
C-O-C number	: ----	Date Issued	: 24-Jul-2017 14:07
No. of samples received	: 17		
No. of samples analysed	: 17	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

Results for all samples detailed in this report are below the upper threshold limits for Fill Material.

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID46CASS11_0.1	ID46CASS11_0.3	ID46CASS11_1	----	----
			Sampling date/time			17-Jul-2017	17-Jul-2017	17-Jul-2017	----	----
						EM1709379-005	EM1709379-006	EM1709379-008	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**5.3**	**6.3**	**5.5**	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg	----	20000	**35**	<5	<5	----	----
Lead	EG005T	5	mg/kg	----	6000	**50**	**12**	<5	----	----
Molybdenum	EG005T	2	mg/kg	----	4000	**5**	<2	<2	----	----
Nickel	EG005T	2	mg/kg	----	12000	**3**	<2	<2	----	----
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	----	----
Zinc	EG005T	5	mg/kg	----	140000	**23**	**9**	<5	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	<40	<40	<40	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS11_0.1	ID46CASS11_0.3	ID46CASS11_1	----	----
				Sampling date/time			17-Jul-2017	17-Jul-2017	17-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709379-005	EM1709379-006	EM1709379-008	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400		<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8		<0.03	<0.03	<0.03	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8		<0.03	<0.03	<0.03	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50		<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16		<0.03	<0.03	<0.03	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50		<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600		<10	<10	<10	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000		<50	<50	<50	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS11_0.1	ID46CASS11_0.3	ID46CASS11_1	----	----
				Sampling date/time			17-Jul-2017	17-Jul-2017	17-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709379-005	EM1709379-006	EM1709379-008	--------	--------
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit		4	9	**5.3**	**6.3**	**5.5**	----	----
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	500	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg		----	100	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg		----	5000	**35**	<5	<5	----	----
Lead	EG005T	5	mg/kg		----	1500	**50**	**12**	<5	----	----
Molybdenum	EG005T	2	mg/kg		----	1000	**5**	<2	<2	----	----
Nickel	EG005T	2	mg/kg		----	3000	**3**	<2	<2	----	----
Selenium	EG005T	5	mg/kg		----	50	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg		----	180	<2	<2	<2	----	----
Tin	EG005T	5	mg/kg		----	500	<5	<5	<5	----	----
Zinc	EG005T	5	mg/kg		----	35000	**23**	**9**	<5	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	75	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	500	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	2500	<1	<1	<1	----	----
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg		----	10000	<40	<40	<40	----	----
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg		----	4	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg		----	70	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg		----	1.2	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg		----	2.8	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg		----	10	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg		----	560	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	5	<0.5	<0.5	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS11_0.1	ID46CASS11_0.3	ID46CASS11_1	----	----
				Sampling date/time			17-Jul-2017	17-Jul-2017	17-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709379-005	EM1709379-006	EM1709379-008	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	100	<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	1.2	<0.03	<0.03	<0.03	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	1.2	<0.03	<0.03	<0.03	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	4	<0.03	<0.03	<0.03	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	650	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	10000	<50	<50	<50	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID46CASS11_0.1 / 17-Jul-2017 / **EM1709379-005**	**ID46CASS11_0.3** / 17-Jul-2017 / **EM1709379-006**	**ID46CASS11_1** / 17-Jul-2017 / **EM1709379-008**	**----** / ---- / --------	**----** / ---- / --------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.3**	**6.3**	**5.5**	**----**	**----**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	<5	**----**	**----**
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	**----**	**----**
Copper	EG005T	5	mg/kg	----	100	**35**	<5	<5	**----**	**----**
Lead	EG005T	5	mg/kg	----	300	**50**	**12**	<5	**----**	**----**
Molybdenum	EG005T	2	mg/kg	----	40	**5**	<2	<2	**----**	**----**
Nickel	EG005T	2	mg/kg	----	60	**3**	<2	<2	**----**	**----**
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	**----**	**----**
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	**----**	**----**
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	**----**	**----**
Zinc	EG005T	5	mg/kg	----	200	**23**	**9**	<5	**----**	**----**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	**----**	**----**
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	**----**	**----**
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	**----**	**----**
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	<40	<40	<40	**----**	**----**
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	**----**	**----**
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	**----**	**----**
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	**----**	**----**
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	**----**	**----**
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	**----**	**----**
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	**----**	**----**
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	**----**	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID46CASS11_0.1**	**ID46CASS11_0.3**	**ID46CASS11_1**	**----**	**----**
						Sampling date/time 17-Jul-2017	17-Jul-2017	17-Jul-2017	----	----
						EM1709379-005	**EM1709379-006**	**EM1709379-008**	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	**----**	**----**
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	<50	<50	**----**	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709379**	Page	: 1 of 11
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 18-Jul-2017
C-O-C number	: ----	Issue Date	: 24-Jul-2017
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 17		
No. of samples analysed	: 17		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1007820)									
EM1709303-061	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.5	7.5	0.00	0% - 20%
EM1709379-006	ID46CASS11_0.3	EA001: pH (CaCl2)	----	0.1	pH Unit	6.3	6.3	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1004515)									
EM1709326-001	Anonymous	EA055: Moisture Content	----	1	%	25.2	22.3	12.3	0% - 20%
EM1709326-018	Anonymous	EA055: Moisture Content	----	1	%	12.7	13.6	6.67	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1004494)									
EM1709326-017	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	95	91	4.14	0% - 50%
EM1709326-017	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	104	110	5.60	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	9	29.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	34	34	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	13	20.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EM1709379-008	ID46CASS11_1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1004494) - continued									
EM1709379-008	ID46CASS11_1	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1004495)									
EM1709326-017	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709379-008	ID46CASS11_1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1004549)									
EM1709326-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709389-010	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	0.6	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1007446)									
EM1709326-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1709326-017	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1004472)									
EM1709326-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	320	290	10.3	No Limit
EM1709326-017	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	420	390	7.15	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1004665)									
EM1709379-005	ID46CASS11_0.1	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1003243)									
EM1709323-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709392-011	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1003243)									
EM1709323-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1709392-011	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1003243)									
EM1709323-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1003243) - continued									
EM1709323-001	Anonymous	EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1709392-011	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1004663)									
EM1709379-005	ID46CASS11_0.1	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1004663) - continued									
EM1709379-005	ID46CASS11_0.1	EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1004663)									
EM1709379-005	ID46CASS11_0.1	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1004663)									
EM1709379-005	ID46CASS11_0.1	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1004663)									
EM1709379-005	ID46CASS11_0.1	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1004663) - continued									
EM1709379-005	ID46CASS11_0.1	EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1003243)									
EM1709323-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1709392-011	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1004664)									
EM1709379-005	ID46CASS11_0.1	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1003243)									
EM1709323-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1709392-011	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1004664)									
EM1709379-005	ID46CASS11_0.1	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1004494)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	87.9	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	104	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	89.4	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.3	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	103	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1004495)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	95.9	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1004549)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	96.8	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1007446)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	90.3	80	110
EK040T: Fluoride Total (QCLot: 1004472)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	80.8	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1004665)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	66.4	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1003243)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	94.8	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	93.2	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	89.5	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	86.6	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	89.5	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	85.6	70	116
EP074H: Naphthalene (QCLot: 1003243)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	92.7	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1003243)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	118	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	96.4	62	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1003243) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	92.7	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.6	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	87.9	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.3	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	93.0	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	90.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	87.8	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.5	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.7	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	90.6	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	84.2	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	87.6	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	78.7	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1004663)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	96.0	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	88.2	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	91.7	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	93.2	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	94.4	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	91.3	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	82.2	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	88.2	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	105	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1004663)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	96.0	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	99.3	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	86.7	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	86.6	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	103	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	43.9	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	91.4	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	72.0	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	63.0	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	68.2	12	132

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1004663)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.0	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	93.7	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.2	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	93.9	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	103	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	104	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	103	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	102	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	109	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	108	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	98.4	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	102	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	89.9	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	89.4	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	92.7	55	137
EP075I: Organochlorine Pesticides (QCLot: 1004663)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	95.5	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	91.1	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	94.4	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	96.4	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	102	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	104	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	104	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	104	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	102	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	106	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	91.6	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	106	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	155	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	105	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	109	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	107	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	107	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	106	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	109	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1003243)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	82.5	69	114

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1004664)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	105	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	102	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	101	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1003243)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	84.7	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1004664)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	104	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	102	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	93.1	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1004494)							
EM1709326-018	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	91.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.1	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	97.0	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	87.5	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	82.3	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	105	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	81.6	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1004495)							
EM1709326-018	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	84.7	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1004549)							
EM1709326-023	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	61.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1007446)							
EM1709326-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	95.5	77	113
EK040T: Fluoride Total (QCLot: 1004472)							
EM1709326-002	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	97.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1004665)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1004665) - continued							
EM1709416-020	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	68.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1003243)							
EM1709379-005	ID46CASS11_0.1	EP074-UT: Benzene	71-43-2	2 mg/kg	113	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	102	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1003243)							
EM1709379-005	ID46CASS11_0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	123	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	107	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	103	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1004663)							
EM1709379-006	ID46CASS11_0.3	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	98.1	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	77.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	59.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1004663)							
EM1709379-006	ID46CASS11_0.3	EP075-EM: Phenol	108-95-2	1 mg/kg	82.3	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	43.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1004663)							
EM1709379-006	ID46CASS11_0.3	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	101	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	109	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1003243)							
EM1709379-005	ID46CASS11_0.1	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	77.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1004664)							
EM1709379-008	ID46CASS11_1	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	100	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	99.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1003243)							
EM1709379-005	ID46CASS11_0.1	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	73.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1004664)							
EM1709379-008	ID46CASS11_1	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	100.0	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	95.8	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709379**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Site	: Bonbeach LX	Issue Date	: 24-Jul-2017
Sampler	: ADW	No. of samples received	: 17
Order number	: 60506004.1.1	No. of samples analysed	: 17

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
ID46CASS11_0.1,	ID46CASS11_0.3,	**17-Jul-2017**	**21-Jul-2017**	24-Jul-2017	✓	**21-Jul-2017**	21-Jul-2017	✓
ID46CASS11_1								
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID46CASS11_18.5,	ID46CASS11_19,	**17-Jul-2017**	**20-Jul-2017**	13-Jan-2018	✓	**20-Jul-2017**	13-Jan-2018	✓
ID46CASS11_19.5,	ID46CASS11_20,							
ID46CASS11_0.1,	ID46CASS11_0.5,							
ID46CASS11_1,	ID46CASS11_1.5							
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID46CASS10_2,	ID46CASS10_2.5,	**18-Jul-2017**	**20-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓
ID46CASS10_3,	ID46CASS10_3.5,							
ID46CASS10_4,	ID46CASS10_4.5,							
ID46CASS10_5,	ID46CASS10_4.2							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
ID46CASS11_0.1,	ID46CASS11_0.3,	**17-Jul-2017**	**----**	----	----	**19-Jul-2017**	31-Jul-2017	✓
ID46CASS11_1								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
ID46CASS11_0.1,	ID46CASS11_0.3,	**17-Jul-2017**	**19-Jul-2017**	13-Jan-2018	✓	**20-Jul-2017**	13-Jan-2018	✓
ID46CASS11_1								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
ID46CASS11_0.1,	ID46CASS11_0.3,	**17-Jul-2017**	**19-Jul-2017**	14-Aug-2017	✓	**20-Jul-2017**	14-Aug-2017	✓
ID46CASS11_1								
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
ID46CASS11_0.1,	ID46CASS11_0.3,	**17-Jul-2017**	**19-Jul-2017**	14-Aug-2017	✓	**19-Jul-2017**	26-Jul-2017	✓
ID46CASS11_1								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**20-Jul-2017**	31-Jul-2017	✓	**21-Jul-2017**	03-Aug-2017	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	14-Aug-2017	✓	**20-Jul-2017**	14-Aug-2017	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**18-Jul-2017**	24-Jul-2017	✓	**20-Jul-2017**	24-Jul-2017	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**18-Jul-2017**	24-Jul-2017	✓	**20-Jul-2017**	24-Jul-2017	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**18-Jul-2017**	24-Jul-2017	✓	**20-Jul-2017**	24-Jul-2017	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**18-Jul-2017**	24-Jul-2017	✓	**20-Jul-2017**	24-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP071-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**18-Jul-2017**	24-Jul-2017	✓	**20-Jul-2017**	24-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP071-EM)							
ID46CASS11_0.1, ID46CASS11_0.3, ID46CASS11_1	**17-Jul-2017**	**19-Jul-2017**	31-Jul-2017	✓	**19-Jul-2017**	28-Aug-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	20	**15.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709379**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 18-Jul-2017 09:45	Issue Date	: 18-Jul-2017
Client Requested Due Date	: 25-Jul-2017	Scheduled Reporting Date	: **25-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 4.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 17 / 17

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 WRG 621
EM1709379-001	17-Jul-2017 00:00	ID46 CASS11_18.5	✓		
EM1709379-002	17-Jul-2017 00:00	ID46 CASS11_19	✓		
EM1709379-003	17-Jul-2017 00:00	ID46 CASS11_19.5	✓		
EM1709379-004	17-Jul-2017 00:00	ID46 CASS11_20	✓		
EM1709379-005	17-Jul-2017 00:00	ID46 CASS11_0.1	✓	✓	✓
EM1709379-006	17-Jul-2017 00:00	ID46 CASS11_0.3		✓	✓
EM1709379-007	17-Jul-2017 00:00	ID46 CASS11_0.5	✓		
EM1709379-008	17-Jul-2017 00:00	ID46 CASS11_1	✓	✓	✓
EM1709379-009	17-Jul-2017 00:00	ID46 CASS11_1.5	✓		
EM1709379-010	18-Jul-2017 00:00	ID46 CASS10_2	✓		
EM1709379-011	18-Jul-2017 00:00	ID46 CASS10_2.5	✓		
EM1709379-012	18-Jul-2017 00:00	ID46 CASS10_3	✓		
EM1709379-013	18-Jul-2017 00:00	ID46 CASS10_3.5	✓		
EM1709379-014	18-Jul-2017 00:00	ID46 CASS10_4	✓		
EM1709379-015	18-Jul-2017 00:00	ID46 CASS10_4.5	✓		
EM1709379-016	18-Jul-2017 00:00	ID46 CASS10_5	✓		
EM1709379-017	18-Jul-2017 00:00	ID46 CASS10_4.2	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number: 3134145	GHD Office: Melbourne
Project: Bonbeach Lx Removal	
GHD Project Manager: J. Hixon	GHD Contact: A. Wilson
Requested Completion Date: Standard	Quote No./GHD Reference

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results.**
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Lab ID Composite Sample	Sample Matrix S: Soil, SL: Sludge W: Water A: Air GW: Groundwater	Preservative	Container Type J: soil jar, B: bag V: vial, G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS field screen	Analyses Required: 1w3PG (62)	Remarks
ID46CASS11_18.5	17/7/17	pm	1	S		B			✓		
- 19			2						✓		
- 19.5			3						✓		
- 20			4						✓		
-0.1			5			B/J			✓	✓	
0.3			6			J				✓	
0.5			7			B			✓		
1			8			B/J			✓	✓	
1.5			9			B			✓		
ID46CASS10 - 2	18/7/17	AM	10						✓		
2.5			11						✓		
3			12						✓		
3.5			13						✓		
4			14						✓		
4.5			15						✓		
5			16						✓		

Environmental Division
Melbourne
Work Order Reference
EM1709379

Telephone : +61-3-8549 9600

Sampled by: ADW	Date/Time 17 & 18/7/2017	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier: Paulette XT 14	Date/Time 18/7/17 9.10am	Relinquished by:	Date/Time
Received by Lab: Mark (AM)	Date/Time 18/7 9-45		

Remarks: Extra Sample: ID46 CASS10-4.2 — Lab ID: 17 — Sampling Date: 18/7/17. — Container: Bag

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709416**	Page	: 1 of 16
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017 16:05
Order number	: 60506004.1.1	Date Analysis Commenced	: 19-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017 11:40
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 25		
No. of samples analysed	: 25		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- All jars received with significant headspace. Volatile organics may be compromised as a result.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	DUP1_180717	ID46CASS10_6	ID46CASS10_6.5	ID46CASS10_7	ID46CASS10_7.5
			Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709416-001	EM1709416-002	EM1709416-003	EM1709416-004	EM1709416-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.3**	**8.2**	**8.8**	**8.8**	**8.6**
pH (Fox)	----	0.1	pH Unit	**5.6**	**5.6**	**6.1**	**5.8**	**5.8**
Reaction Rate	----	1	-	**1**	**1**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_8	ID46CASS10_8.5	ID46CASS10_9	ID46CASS10_9.5	ID46CASS10_10
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-006	EM1709416-007	EM1709416-008	EM1709416-009	EM1709416-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.7**	**9.3**	**9.0**	**8.7**	**8.7**
pH (Fox)	----	0.1	pH Unit		**5.9**	**6.1**	**5.5**	**4.9**	**5.4**
Reaction Rate	----	1	-		**2**	**1**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS10_10.5	ID46CASS10_11	ID46CASS10_11.5	ID46CASS10_12	ID46CASS10_12.5
			Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709416-011	EM1709416-012	EM1709416-013	EM1709416-014	EM1709416-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.6**	**8.6**	**8.6**	**9.3**	**9.3**
pH (Fox)	----	0.1	pH Unit	**2.2**	**1.4**	**1.8**	**1.9**	**6.3**
Reaction Rate	----	1	-	**4**	**4**	**2**	**4**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_13	ID46CASS10_13.5	ID46CASS10_14	QC1180717	ID46CASS10_0.1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-016	EM1709416-017	EM1709416-018	EM1709416-019	EM1709416-020
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		----	----	----	----	6.2
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		9.2	8.9	8.8	6.1	6.5
pH (Fox)	----	0.1	pH Unit		6.2	5.8	5.7	4.9	5.2
Reaction Rate	----	1	-		2	1	2	1	2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1	%		----	----	----	----	5.4
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	----	----	----	<5
Cadmium	7440-43-9	1	mg/kg		----	----	----	----	<1
Copper	7440-50-8	5	mg/kg		----	----	----	----	62
Lead	7439-92-1	5	mg/kg		----	----	----	----	139
Molybdenum	7439-98-7	2	mg/kg		----	----	----	----	<2
Nickel	7440-02-0	2	mg/kg		----	----	----	----	6
Selenium	7782-49-2	5	mg/kg		----	----	----	----	<5
Silver	7440-22-4	2	mg/kg		----	----	----	----	<2
Tin	7440-31-5	5	mg/kg		----	----	----	----	<5
Zinc	7440-66-6	5	mg/kg		----	----	----	----	72
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	----	----	----	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	----	----	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	----	----	----	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	----	----	----	100
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg		----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_13	ID46CASS10_13.5	ID46CASS10_14	QC1180717	ID46CASS10_0.1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-016	EM1709416-017	EM1709416-018	EM1709416-019	EM1709416-020
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	----	----	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	----	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		----	----	----	----	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg		----	----	----	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		----	----	----	----	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		----	----	----	----	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		----	----	----	----	<0.01
Chloroform	67-66-3	0.02	mg/kg		----	----	----	----	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		----	----	----	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		----	----	----	----	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg		----	----	----	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		----	----	----	----	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		----	----	----	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		----	----	----	----	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		----	----	----	----	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		----	----	----	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		----	----	----	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		----	----	----	----	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		----	----	----	----	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		----	----	----	----	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		----	----	----	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		----	----	----	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		----	----	----	----	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	----	----	----	<0.03
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	----	----	----	<0.03
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	----	----	----	<0.03
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_13	ID46CASS10_13.5	ID46CASS10_14	QC1180717	ID46CASS10_0.1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-016	EM1709416-017	EM1709416-018	EM1709416-019	EM1709416-020
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	----	----	<0.05
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	----	----	<0.03
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	----	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	----	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	----	----	<1
2-Methylphenol	95-48-7	1	mg/kg		----	----	----	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	----	<1
2-Nitrophenol	88-75-5	1	mg/kg		----	----	----	----	<1
2.4-Dimethylphenol	105-67-9	1	mg/kg		----	----	----	----	<1
2.4-Dinitrophenol	51-28-5	5	mg/kg		----	----	----	----	<5
4-Nitrophenol	100-02-7	5	mg/kg		----	----	----	----	<5
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		----	----	----	----	<5
Dinoseb	88-85-7	5	mg/kg		----	----	----	----	<5
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		----	----	----	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_13	ID46CASS10_13.5	ID46CASS10_14	QC1180717	ID46CASS10_0.1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-016	EM1709416-017	EM1709416-018	EM1709416-019	EM1709416-020
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	----	**1.2**
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		----	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		----	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg		----	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		----	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg		----	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg		----	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg		----	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		----	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		----	----	----	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		----	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		----	----	----	----	<0.03
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg		----	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		----	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg		----	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		----	----	----	----	<0.03
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		----	----	----	----	<0.03
4.4`-DDT	50-29-3	0.05	mg/kg		----	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg		----	----	----	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		----	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	----	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_13	ID46CASS10_13.5	ID46CASS10_14	QC1180717	ID46CASS10_0.1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-016	EM1709416-017	EM1709416-018	EM1709416-019	EM1709416-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	**97.0**
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	----	----	**77.4**
Toluene-D8	2037-26-5	0.1	%		----	----	----	----	**70.0**
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	----	----	**78.1**
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		----	----	----	----	**114**
2-Chlorophenol-D4	93951-73-6	0.025	%		----	----	----	----	**102**
2.4.6-Tribromophenol	118-79-6	0.025	%		----	----	----	----	**112**
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		----	----	----	----	**98.2**
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	----	----	----	**100**
2-Fluorobiphenyl	321-60-8	0.025	%		----	----	----	----	**112**
Anthracene-d10	1719-06-8	0.025	%		----	----	----	----	**128**
4-Terphenyl-d14	1718-51-0	0.025	%		----	----	----	----	**130**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS10_0.5	ID46CASS10_1	ID46CASS10_1.5	ID46CASS10_2.2	ID46CASS10_5.5
			Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709416-021	EM1709416-022	EM1709416-023	EM1709416-024	EM1709416-025
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.5	----	----	5.0	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.7	7.8	7.0	----	6.7
pH (Fox)	----	0.1	pH Unit	5.0	5.2	5.0	----	5.0
Reaction Rate	----	1	-	3	2	1	----	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1	%	7.6	----	----	1.5	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----
Copper	7440-50-8	5	mg/kg	56	----	----	<5	----
Lead	7439-92-1	5	mg/kg	71	----	----	<5	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	<2	----
Nickel	7440-02-0	2	mg/kg	22	----	----	<2	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	<5	----
Silver	7440-22-4	2	mg/kg	<2	----	----	<2	----
Tin	7440-31-5	5	mg/kg	<5	----	----	<5	----
Zinc	7440-66-6	5	mg/kg	136	----	----	<5	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	90	----	----	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_0.5	ID46CASS10_1	ID46CASS10_1.5	ID46CASS10_2.2	ID46CASS10_5.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-021	EM1709416-022	EM1709416-023	EM1709416-024	EM1709416-025
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_0.5	ID46CASS10_1	ID46CASS10_1.5	ID46CASS10_2.2	ID46CASS10_5.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-021	EM1709416-022	EM1709416-023	EM1709416-024	EM1709416-025
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		**1.5**	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		**0.7**	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		**3.2**	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		**3.1**	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		**1.2**	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		**1.0**	----	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		**2.2**	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**1.4**	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		**0.7**	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		**0.9**	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_0.5	ID46CASS10_1	ID46CASS10_1.5	ID46CASS10_2.2	ID46CASS10_5.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-021	EM1709416-022	EM1709416-023	EM1709416-024	EM1709416-025
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**15.9**	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		**1.8**	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**2.1**	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**2.3**	----	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS10_0.5	ID46CASS10_1	ID46CASS10_1.5	ID46CASS10_2.2	ID46CASS10_5.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709416-021	EM1709416-022	EM1709416-023	EM1709416-024	EM1709416-025
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		120	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		120	----	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		96.8	----	----	75.9	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		89.0	----	----	104	----
Toluene-D8	2037-26-5	0.1	%		82.6	----	----	92.5	----
4-Bromofluorobenzene	460-00-4	0.1	%		87.0	----	----	99.0	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		126	----	----	93.6	----
2-Chlorophenol-D4	93951-73-6	0.025	%		110	----	----	80.7	----
2.4.6-Tribromophenol	118-79-6	0.025	%		120	----	----	88.4	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		111	----	----	92.2	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		110	----	----	91.0	----
2-Fluorobiphenyl	321-60-8	0.025	%		119	----	----	101	----
Anthracene-d10	1719-06-8	0.025	%		135	----	----	111	----
4-Terphenyl-d14	1718-51-0	0.025	%		130	----	----	110	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709416**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 18-Jul-2017 16:05
Order number	: 60506004.1.1	Date Analysed	: 19-Jul-2017
C-O-C number	: ----	Date Issued	: 25-Jul-2017 11:40
No. of samples received	: 25		
No. of samples analysed	: 25	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	*ALS Sample ID*	*Compound*	*Method*	*LOR*	*Limits*	*Result*
ID46CASS10_0.5	**EM1709416-021**	Benzo(a)pyrene	EP075-EM	0.5	*< 1 mg/kg*	**1.4 mg/kg**

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID46CASS10_0.1	ID46CASS10_0.5	ID46CASS10_2.2	----	----
			Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
						EM1709416-020	EM1709416-021	EM1709416-024	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**6.2**	**7.5**	**5.0**	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg	----	20000	**62**	**56**	<5	----	----
Lead	EG005T	5	mg/kg	----	6000	**139**	**71**	<5	----	----
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	----	----
Nickel	EG005T	2	mg/kg	----	12000	**6**	**22**	<2	----	----
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	----	----
Zinc	EG005T	5	mg/kg	----	140000	**72**	**136**	<5	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	**100**	**90**	<40	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	**1.4**	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS10_0.1	ID46CASS10_0.5	ID46CASS10_2.2	----	----
				Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709416-020	EM1709416-021	EM1709416-024	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	**15.9**	<0.5	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	<0.03	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	<50	<50	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS10_0.1	ID46CASS10_0.5	ID46CASS10_2.2	----	----
				Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709416-020	EM1709416-021	EM1709416-024	--------	--------
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit		4	9	**6.2**	**7.5**	**5.0**	----	----
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	500	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg		----	100	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg		----	5000	**62**	**56**	<5	----	----
Lead	EG005T	5	mg/kg		----	1500	**139**	**71**	<5	----	----
Molybdenum	EG005T	2	mg/kg		----	1000	<2	<2	<2	----	----
Nickel	EG005T	2	mg/kg		----	3000	**6**	**22**	<2	----	----
Selenium	EG005T	5	mg/kg		----	50	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg		----	180	<2	<2	<2	----	----
Tin	EG005T	5	mg/kg		----	500	<5	<5	<5	----	----
Zinc	EG005T	5	mg/kg		----	35000	**72**	**136**	<5	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	75	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	500	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	2500	<1	<1	<1	----	----
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg		----	10000	**100**	**90**	<40	----	----
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg		----	4	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg		----	70	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg		----	1.2	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg		----	2.8	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg		----	10	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg		----	560	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	5	<0.5	**1.4**	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS10_0.1	ID46CASS10_0.5	ID46CASS10_2.2	----	----
				Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709416-020	EM1709416-021	EM1709416-024	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	**15.9**	<0.5	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.03	<0.03	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	<50	<50	<50	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID46CASS10_0.1 18-Jul-2017	**ID46CASS10_0.5** 18-Jul-2017	**ID46CASS10_2.2** 18-Jul-2017	---- ----	---- ----
						EM1709416-020	**EM1709416-021**	**EM1709416-024**	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**6.2**	**7.5**	**5.0**	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg	----	100	**62**	**56**	<5	----	----
Lead	EG005T	5	mg/kg	----	300	**139**	**71**	<5	----	----
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	----	----
Nickel	EG005T	2	mg/kg	----	60	**6**	**22**	<2	----	----
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	----	----
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	----	----
Zinc	EG005T	5	mg/kg	----	200	**72**	**136**	<5	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	**100**	**90**	<40	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	**1.4**	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID46CASS10_0.1**	**ID46CASS10_0.5**	**ID46CASS10_2.2**	**----**	**----**
						Sampling date/time 18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
						EM1709416-020	**EM1709416-021**	**EM1709416-024**	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	**15.9**	<0.5	**----**	**----**
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	<50	<50	**----**	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709416**	Page	: 1 of 20
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 19-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 25		
No. of samples analysed	: 25		

ilac-MRA NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1007820)									
EM1709303-061	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.5	7.5	0.00	0% - 20%
EM1709379-006	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.3	6.3	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1004518)									
EM1709410-002	Anonymous	EA055: Moisture Content	----	1	%	8.9	9.2	3.07	No Limit
EM1709431-018	Anonymous	EA055: Moisture Content	----	1	%	13.4	13.2	0.966	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1007380)									
EM1709416-024	ID46CASS10_2.2	EA055: Moisture Content	----	1	%	1.5	1.5	0.00	No Limit
EM1709482-004	Anonymous	EA055: Moisture Content	----	1	%	29.2	29.2	0.00	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1004494)									
EM1709326-017	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	95	91	4.14	0% - 50%
EM1709326-017	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	104	110	5.60	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	9	29.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	34	34	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	13	20.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EM1709379-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1004494) - continued									
EM1709379-008	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1007365)									
EM1709416-024	ID46CASS10_2.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EM1709483-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	5	<2	88.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	14.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	87	96	9.84	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	21	25.2	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	13	8.76	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1004495)									
EM1709326-017	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709379-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1007364)									
EM1709416-024	ID46CASS10_2.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709483-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1004549)									
EM1709326-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709389-010	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	0.6	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1007362)									
EM1709404-036	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1007447)									
EM1709389-005	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1007447) - continued									
EM1709471-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1004473)									
EM1709389-005	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	270	270	0.00	No Limit
EM1709430-017	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	150	160	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1007358)									
EM1709416-024	ID46CASS10_2.2	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	<40	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1004665)									
EM1709379-005	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1006876)									
EM1709416-024	ID46CASS10_2.2	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1004475)									
EM1709416-020	ID46CASS10_0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1006779)									
EM1709416-024	ID46CASS10_2.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1004475)									
EM1709416-020	ID46CASS10_0.1	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1006779)									
EM1709416-024	ID46CASS10_2.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1004475)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1004475) - continued									
EM1709416-020	ID46CASS10_0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1006779)									
EM1709416-024	ID46CASS10_2.2	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1006779) - continued									
EM1709480-001	Anonymous	EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1004663)									
EM1709379-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1006874)									
EM1709416-024	ID46CASS10_2.2	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1004663)									
EM1709379-005	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1006874)									
EM1709416-024	ID46CASS10_2.2	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1004663)									
EM1709379-005	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1006874)									
EM1709416-024	ID46CASS10_2.2	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1006874) - continued									
EM1709416-024	ID46CASS10_2.2	EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1004663)									
EM1709379-005	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1006874)									
EM1709416-024	ID46CASS10_2.2	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1006874) - continued									
EM1709416-024	ID46CASS10_2.2	EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1004475)									
EM1709416-020	ID46CASS10_0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1004664)									
EM1709379-005	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006779)									
EM1709416-024	ID46CASS10_2.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006875)									
EM1709416-024	ID46CASS10_2.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1004475)									
EM1709416-020	ID46CASS10_0.1	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1004664)									
EM1709379-005	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006779)									
EM1709416-024	ID46CASS10_2.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006779) - continued									
EM1709416-024	ID46CASS10_2.2	EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006875)									
EM1709416-024	ID46CASS10_2.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1004494)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	87.9	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	104	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	89.4	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.3	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	103	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.3	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1007365)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	93.9	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.3	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	96.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	93.6	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	96.9	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	103	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	93.4	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.6	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1004495)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	95.9	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1007364)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.1	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1004549)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	96.8	80	120
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1007362)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	81.4	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1007447)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	96.1	80	110
EK040T: Fluoride Total (QCLot: 1004473)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	91.8	77	106

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EK040T: Fluoride Total (QCLot: 1007358)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	101	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1004665)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	66.4	63	133
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006876)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	79.0	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1004475)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	103	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	105	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	102	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	98.8	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	97.2	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	96.7	70	116
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1006779)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	106	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	99.8	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	101	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	96.9	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	100	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	96.5	70	116
EP074H: Naphthalene (QCLot: 1004475)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.0	74	116
EP074H: Naphthalene (QCLot: 1006779)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	96.0	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1004475)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	110	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	107	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	102	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	107	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	98.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	102	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	103	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	99.4	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	98.6	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	92.6	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	98.0	58	120

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1004475) - continued								
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.6	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.5	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	92.5	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	94.8	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	88.0	53	127
EP074I: Volatile Halogenated Compounds (QCLot: 1006779)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	114	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	112	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	102	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	113	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	103	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	101	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	105	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	106	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	103	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	101	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.0	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	97.2	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	105	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.7	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	96.8	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.8	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1004663)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	96.0	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	88.2	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	91.7	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	93.2	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	94.4	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	91.3	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	82.2	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	88.2	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	105	36	124

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1006874)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	85.2	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	86.8	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	93.2	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	91.7	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	90.8	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	91.1	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	83.8	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	95.2	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	107	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1004663)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	96.0	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	99.3	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	86.7	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	86.6	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	103	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	43.9	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	91.4	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	72.0	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	63.0	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	68.2	12	132
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1006874)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	92.5	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	103	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	86.3	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	84.0	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	99.8	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	73.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	82.4	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	66.1	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	60.8	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	59.8	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1004663)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.0	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	93.7	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.2	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	93.9	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	103	57	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1004663) - continued								
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	104	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	103	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	102	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	109	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	108	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	98.4	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	102	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	89.9	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	89.4	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	92.7	55	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1006874)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	94.7	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	93.5	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	95.2	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	94.2	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	104	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	106	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	107	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	116	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	116	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	108	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	108	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	98.6	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	98.1	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	97.8	55	137
EP075I: Organochlorine Pesticides (QCLot: 1004663)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	95.5	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	91.1	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	94.4	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	96.4	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	102	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	104	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	104	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	104	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	102	55	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 1004663) - continued								
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	106	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	91.6	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	106	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	155	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	105	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	109	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	107	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	107	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	106	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	109	48	136
EP075I: Organochlorine Pesticides (QCLot: 1006874)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	96.7	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	92.1	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	96.4	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	97.6	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	106	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	106	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	106	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	107	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	106	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	109	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	93.9	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	110	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	169	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	109	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	114	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	114	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	114	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	111	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	113	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1004475)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	93.0	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1004664)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	105	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	102	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	101	75	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779) - continued								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	90.2	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006875)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	99.5	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	96.1	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	92.3	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1004475)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	90.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1004664)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	104	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	102	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	93.1	43	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006779)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	88.8	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006875)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	78.3	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	95.9	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	93.3	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1004494)							
EM1709326-018	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	91.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.1	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	97.0	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	87.5	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	82.3	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	105	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	81.6	74	128

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1007365)							
EM1709471-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	93.6	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	86.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	92.2	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	89.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	82.9	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	114	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	82.1	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	88.6	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1004495)							
EM1709326-018	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	84.7	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1007364)							
EM1709471-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	84.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1004549)							
EM1709326-023	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	61.4	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1007362)							
EM1709404-042	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	67.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1007447)							
EM1709389-010	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	94.7	77	113
EK040T: Fluoride Total (QCLot: 1004473)							
EM1709389-010	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	83.5	70	130
EK040T: Fluoride Total (QCLot: 1007358)							
EM1709471-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	120	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1004665)							
EM1709416-020	ID46CASS10_0.1	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	68.2	36	152
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006876)							
EM1709492-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	70.5	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1004475)							
EM1709416-021	ID46CASS10_0.5	EP074-UT: Benzene	71-43-2	2 mg/kg	99.9	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	92.8	56	134
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	103	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	106	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1004475)							
EM1709416-021	ID46CASS10_0.5	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	106	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	95.9	50	134

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1004475) - continued							
EM1709416-021	ID46CASS10_0.5	EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	94.4	28	134
EP074I: Volatile Halogenated Compounds (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	104	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	106	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1004663)							
EM1709379-006	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	98.1	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	77.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	59.6	10	144
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1006874)							
EM1709471-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	91.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	80.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	34.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1004663)							
EM1709379-006	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	82.3	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	43.6	13	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1006874)							
EM1709471-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	82.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	69.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1004663)							
EM1709379-006	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	101	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	109	27	169
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1006874)							
EM1709471-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	103	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	115	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1004475)							
EM1709416-021	ID46CASS10_0.5	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	75.3	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1004664)							
EM1709379-008	Anonymous	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	100	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	99.7	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	95.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006875)							
EM1709492-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	94.7	53	123

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006875) - continued							
EM1709492-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	90.1	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	87.1	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1004475)							
EM1709416-021	ID46CASS10_0.5	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	72.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1004664)							
EM1709379-008	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	100.0	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	95.8	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	92.8	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006875)							
EM1709492-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	74.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	90.1	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	88.8	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709416**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Site	: Bonbeach LX	Issue Date	: 25-Jul-2017
Sampler	: ADW	No. of samples received	: 25
Order number	: 60506004.1.1	No. of samples analysed	: 25

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075T: Base/Neutral Extractable Surrogates	EM1709416-021	ID46CASS10_0.5	**Anthracene-d10**	1719-06-8	135 %	53-133 %	**Recovery greater than upper data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
ID46CASS10_0.1,	ID46CASS10_0.5,	**18-Jul-2017**	**21-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	21-Jul-2017	✓
ID46CASS10_2.2								
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037)								
DUP1_180717,	ID46CASS10_6,	**18-Jul-2017**	**20-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓
ID46CASS10_6.5,	ID46CASS10_7,							
ID46CASS10_7.5,	ID46CASS10_8,							
ID46CASS10_8.5,	ID46CASS10_9,							
ID46CASS10_9.5,	ID46CASS10_10,							
ID46CASS10_10.5,	ID46CASS10_11,							
ID46CASS10_11.5,	ID46CASS10_12,							
ID46CASS10_12.5,	ID46CASS10_13,							
ID46CASS10_13.5,	ID46CASS10_14,							
QC1180717,	ID46CASS10_0.1,							
ID46CASS10_0.5,	ID46CASS10_1,							
ID46CASS10_1.5,	ID46CASS10_5.5							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
ID46CASS10_0.1,	ID46CASS10_0.5	**18-Jul-2017**	**----**	----	----	**19-Jul-2017**	01-Aug-2017	✓
Soil Glass Jar - Unpreserved (EA055)								
ID46CASS10_2.2		**18-Jul-2017**	**----**	----	----	**20-Jul-2017**	01-Aug-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓
Soil Glass Jar - Unpreserved (EG005T) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	15-Aug-2017	✓	**20-Jul-2017**	15-Aug-2017	✓
Soil Glass Jar - Unpreserved (EG035T) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	15-Aug-2017	✓	**21-Jul-2017**	15-Aug-2017	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	15-Aug-2017	✓	**19-Jul-2017**	26-Jul-2017	✓
Soil Glass Jar - Unpreserved (EG048G) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	15-Aug-2017	✓	**20-Jul-2017**	27-Jul-2017	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) ID46CASS10_0.1, ID46CASS10_0.5, ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**21-Jul-2017**	03-Aug-2017	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	15-Aug-2017	✓	**20-Jul-2017**	15-Aug-2017	✓
Soil Glass Jar - Unpreserved (EK040T) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	15-Aug-2017	✓	**21-Jul-2017**	15-Aug-2017	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP066-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP075-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP071-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	01-Aug-2017	✓	**19-Jul-2017**	28-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_0.1, ID46CASS10_0.5	**18-Jul-2017**	**19-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP071-EM) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT) ID46CASS10_2.2	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	3	21	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	3	12	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	35	**11.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	5	40	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	21	**19.05**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709416**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 18-Jul-2017 16:05	Issue Date	: 18-Jul-2017
Client Requested Due Date	: 25-Jul-2017	Scheduled Reporting Date	: **25-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 5.3°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 25 / 24

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1709416-001	18-Jul-2017 00:00	DUP1_180717		✓		
EM1709416-002	18-Jul-2017 00:00	ID46CASS10_6		✓		
EM1709416-003	18-Jul-2017 00:00	ID46CASS10_6.5		✓		
EM1709416-004	18-Jul-2017 00:00	ID46CASS10_7		✓		
EM1709416-005	18-Jul-2017 00:00	ID46CASS10_7.5		✓		
EM1709416-006	18-Jul-2017 00:00	ID46CASS10_8		✓		
EM1709416-007	18-Jul-2017 00:00	ID46CASS10_8.5		✓		
EM1709416-008	18-Jul-2017 00:00	ID46CASS10_9		✓		
EM1709416-009	18-Jul-2017 00:00	ID46CASS10_9.5		✓		
EM1709416-010	18-Jul-2017 00:00	ID46CASS10_10		✓		
EM1709416-011	18-Jul-2017 00:00	ID46CASS10_10.5		✓		
EM1709416-012	18-Jul-2017 00:00	ID46CASS10_11		✓		
EM1709416-013	18-Jul-2017 00:00	ID46CASS10_11.5		✓		
EM1709416-014	18-Jul-2017 00:00	ID46CASS10_12		✓		
EM1709416-015	18-Jul-2017 00:00	ID46CASS10_12.5		✓		
EM1709416-016	18-Jul-2017 00:00	ID46CASS10_13		✓		
EM1709416-017	18-Jul-2017 00:00	ID46CASS10_13.5		✓		
EM1709416-018	18-Jul-2017 00:00	ID46CASS10_14		✓		
EM1709416-019	18-Jul-2017 00:00	QC1180717		✓		
EM1709416-020	18-Jul-2017 00:00	ID46CASS10_0.1		✓	✓	✓
EM1709416-021	18-Jul-2017 00:00	ID46CASS10_0.5		✓	✓	✓
EM1709416-022	18-Jul-2017 00:00	ID46CASS10_1		✓		
EM1709416-023	18-Jul-2017 00:00	ID46CASS10_1.5		✓		
EM1709416-024	18-Jul-2017 00:00	ID46CASS10_2.2	✓			
EM1709416-025	18-Jul-2017 00:00	ID46CASS10_5.5		✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709416**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 18-Jul-2017 16:05	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 25-Jul-2017	Scheduled Reporting Date	: **24-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 5.3°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 25 / 25

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 WRG 621
EM1709416-001	18-Jul-2017 00:00	DUP1_180717	✓		
EM1709416-002	18-Jul-2017 00:00	ID46CASS10_6	✓		
EM1709416-003	18-Jul-2017 00:00	ID46CASS10_6.5	✓		
EM1709416-004	18-Jul-2017 00:00	ID46CASS10_7	✓		
EM1709416-005	18-Jul-2017 00:00	ID46CASS10_7.5	✓		
EM1709416-006	18-Jul-2017 00:00	ID46CASS10_8	✓		
EM1709416-007	18-Jul-2017 00:00	ID46CASS10_8.5	✓		
EM1709416-008	18-Jul-2017 00:00	ID46CASS10_9	✓		
EM1709416-009	18-Jul-2017 00:00	ID46CASS10_9.5	✓		
EM1709416-010	18-Jul-2017 00:00	ID46CASS10_10	✓		
EM1709416-011	18-Jul-2017 00:00	ID46CASS10_10.5	✓		
EM1709416-012	18-Jul-2017 00:00	ID46CASS10_11	✓		
EM1709416-013	18-Jul-2017 00:00	ID46CASS10_11.5	✓		
EM1709416-014	18-Jul-2017 00:00	ID46CASS10_12	✓		
EM1709416-015	18-Jul-2017 00:00	ID46CASS10_12.5	✓		
EM1709416-016	18-Jul-2017 00:00	ID46CASS10_13	✓		
EM1709416-017	18-Jul-2017 00:00	ID46CASS10_13.5	✓		
EM1709416-018	18-Jul-2017 00:00	ID46CASS10_14	✓		
EM1709416-019	18-Jul-2017 00:00	QC1180717	✓		
EM1709416-020	18-Jul-2017 00:00	ID46CASS10_0.1	✓	✓	✓
EM1709416-021	18-Jul-2017 00:00	ID46CASS10_0.5	✓	✓	✓
EM1709416-022	18-Jul-2017 00:00	ID46CASS10_1	✓		
EM1709416-023	18-Jul-2017 00:00	ID46CASS10_1.5	✓		
EM1709416-024	18-Jul-2017 00:00	ID46CASS10_2.2		✓	✓
EM1709416-025	18-Jul-2017 00:00	ID46CASS10_5.5	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number: 3134145	GHD Office: Melbourne
Project: Banbeach Lx removal	
GHD Project Manager: J. Hixon	GHD Contact: A. Wilson
Requested Completion Date: Standard	Quote No./GHD Reference

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results**.
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Lab ID	Sample Matrix (S: Soil, SL: Sludge, W: Water, A: Air, GW: Groundwater)	Preservative	Container Type (J: soil jar, B: bag, V: vial, G: glass bottle, P: plastic bottle)	Container Number	Container Volume (mL)	Analyses Required: ASS Field screen	Remarks
DUP1-180717	18/7/17	Am	1	S		B			✓	Please on-send sample package DUP2-180717 to Eurofins
ID46CLASS10-6			2						✓	
6.5			3						✓	
7			4						✓	
7.5			5						✓	
8			6						✓	
8.5			7						✓	
9			8						✓	
9.5			9						✓	
10			10						✓	
10.5			11						✓	
11			12						✓	
11.5			13						✓	
12			14						✓	
12.5			15						✓	
13			16						✓	

Forwarded to Secondary Lab
Initials SH Date: 18/7

Environmental Division
Melbourne
Work Order Reference
EM1709416

Telephone : + 61-3-8549 9600

Sampled by: DW	Date/Time 18/7/17; am/pm	Relinquished by:	Date/Time
Received by:	Date/Time 18/7/17 3pm	Relinquished by:	Date/Time
Received by Courier:	Date/Time	Relinquished by:	Date/Time
Received by Lab:	Date/Time 18/7, 1605		
Remarks:			

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number	GHD Office	Laboratory:
Project		Address:
GHD Project Manager	GHD Contact	Laboratory Contact:
Requested Completion Date	Quote No./GHD Reference	

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results**.
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Lab ID	Composite / Sample	Sample Matrix S: Soil, SL: Sludge W: Water A: Air GW: Groundwater	Preservative	Container Type J: soil jar B: bag V: Vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS Field screen	140626621	Remarks
1D46CASS10_13.5	18/7/17	pm.	17	S			B			✓		
-14			18							✓		
QC1 180717			19							✓		
1D46CASS10_0.1			20				B/J			✓	✓	
-0.5			21				B/J			✓	✓	
-1			22							✓		
-1.5			23							✓		
Extra Samples:												
1D46CASS10_2.2	18/7/17		24	S			BJ					
1D46CASS10_5.5	18/7/17		25	S			BJ					

Sampled by:	Date/Time	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier:	Date/Time	Relinquished by:	Date/Time
Received by Lab: Marwa (AM)	Date/Time 18/7 1605		
Remarks:			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709421**	Page	: 1 of 6
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017 16:05
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 07-Sep-2017 12:04
Sampler	: Joshua Riley		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 19		
No. of samples analysed	: 19		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (07/09/2017): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sam Singleton on 7th September 2017. All analysis results are as per the previous report.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS05_13.0	ID18-CASS05_13.5	ID18-CASS05_14.0	ID18-CASS05_14.5	ID18-CASS05_15.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709421-001	EM1709421-002	EM1709421-003	EM1709421-004	EM1709421-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.3**	**8.0**	**7.6**	**8.6**	**8.9**
pH (Fox)	----	0.1	pH Unit		**1.6**	**1.8**	**2.3**	**2.1**	**6.7**
Reaction Rate	----	1	-		**2**	**2**	**4**	**4**	**4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS05_16.0	ID18-CASS05_17.0	ID18-CASS05_17.5	ID18-CASS05_18.0	ID18-CASS05_18.5
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709421-006	EM1709421-007	EM1709421-008	EM1709421-009	EM1709421-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.1**	**8.1**	**7.8**	**8.0**	**7.8**
pH (Fox)	----	0.1	pH Unit		**4.9**	**6.2**	**5.8**	**5.5**	**5.3**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS05_19.5	ID18-CASS05_20.0	ID18-CASS05_15	ID18-CASS05_QC2	ID18-CASS05_QC3
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709421-011	EM1709421-012	EM1709421-013	EM1709421-014	EM1709421-015
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**7.5**	**8.0**	**8.5**	**9.1**	**9.2**
pH (Fox)	----	0.1	pH Unit		**5.4**	**5.7**	**5.3**	**5.3**	**5.5**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18-CASS05_16.5	ID18-CASS05_QC5	ID18-CASS05_19	ID18-CASS05_QC7	----
			Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit	EM1709421-016	EM1709421-017	EM1709421-018	EM1709421-019	--------
				Result	Result	Result	Result	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.0**	**7.8**	**7.6**	**7.4**	**----**
pH (Fox)	----	0.1	pH Unit	**5.4**	**5.2**	**5.4**	**5.5**	**----**
Reaction Rate	----	1	-	**2**	**2**	**1**	**2**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709421**	Page	: 1 of 3
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 07-Sep-2017
Sampler	: Joshua Riley		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 19		
No. of samples analysed	: 19		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709421**	Page	: 1 of 4
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 18-Jul-2017
Site	: Edithvale LX	Issue Date	: 07-Sep-2017
Sampler	: Joshua Riley	No. of samples received	: 19
Order number	: 60506004.1.1	No. of samples analysed	: 19

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18-CASS05_13.0, ID18-CASS05_13.5, ID18-CASS05_14.0, ID18-CASS05_14.5, ID18-CASS05_15.5, ID18-CASS05_16.0, ID18-CASS05_17.0, ID18-CASS05_17.5, ID18-CASS05_18.0, ID18-CASS05_18.5, ID18-CASS05_19.5, ID18-CASS05_20.0, ID18-CASS05_15, ID18-CASS05_QC2, ID18-CASS05_QC3, ID18-CASS05_16.5, ID18-CASS05_QC5, ID18-CASS05_19, ID18-CASS05_QC7	**18-Jul-2017**	**20-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM1709421**		
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX		
Sampler	: Joshua Riley		

Dates

Date Samples Received	: 18-Jul-2017 16:05	Issue Date	: 07-Sep-2017
Client Requested Due Date	: 25-Jul-2017	Scheduled Reporting Date	: **21-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 3.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 19 / 19

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709421-001	18-Jul-2017 00:00	ID18-CASS05_13.0	✓
EM1709421-002	18-Jul-2017 00:00	ID18-CASS05_13.5	✓
EM1709421-003	18-Jul-2017 00:00	ID18-CASS05_14.0	✓
EM1709421-004	18-Jul-2017 00:00	ID18-CASS05_14.5	✓
EM1709421-005	18-Jul-2017 00:00	ID18-CASS05_15.5	✓
EM1709421-006	18-Jul-2017 00:00	ID18-CASS05_16.0	✓
EM1709421-007	18-Jul-2017 00:00	ID18-CASS05_17.0	✓
EM1709421-008	18-Jul-2017 00:00	ID18-CASS05_17.5	✓
EM1709421-009	18-Jul-2017 00:00	ID18-CASS05_18.0	✓
EM1709421-010	18-Jul-2017 00:00	ID18-CASS05_18.5	✓
EM1709421-011	18-Jul-2017 00:00	ID18-CASS05_19.5	✓
EM1709421-012	18-Jul-2017 00:00	ID18-CASS05_20.0	✓
EM1709421-013	18-Jul-2017 00:00	ID18-CASS05_15	✓
EM1709421-014	18-Jul-2017 00:00	ID18-CASS05_QC2	✓
EM1709421-015	18-Jul-2017 00:00	ID18-CASS05_QC3	✓
EM1709421-016	18-Jul-2017 00:00	ID18-CASS05_16.5	✓
EM1709421-017	18-Jul-2017 00:00	ID18-CASS05_QC5	✓
EM1709421-018	18-Jul-2017 00:00	ID18-CASS05_19	✓
EM1709421-019	18-Jul-2017 00:00	ID18-CASS05_QC7	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address	Completion Date / Turnaround	Quote # / GHD Reference
180 Lonsdale Street, Melbourne 3000 Telephone: 613 8687 8000 Fax: 613 8687 8111	STANDARD	

Job Number	GHD Contact
3134145	ALAN WILSON
Project	
EDITHVALE - LXRA.	
GHD Project Manager	**GHD Contact**
JOSEPH HIXSON	18/7/17
GHD PM email	**GHD Contact email**

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Lab ID (Laboratory Use Only)	Sample Matrix: S: Soil Sls: Sludge W: Water A: Air GW: Groundwater	Container Type: J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ALL FIELD SHEETS	SAMPLE COMMENTS
ID18-CASS05_13.0	18/7	PM	1	S	B			✓	
-13.5			2					✓	
-14.0			3					✓	
-14.5			4					✓	
-15.5			5					✓	
-16.0			6					✓	
-17.0			7					✓	
-17.5			8					✓	
-18.0			9					✓	
-18.5			10					✓	
-19.5			11					✓	
-20.0			12					✓	

Environmental Division
Melbourne
Work Order Reference
EM1709421

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:	20
TOTAL NUMBER OF ESKIES:	2
SAMPLES/ESKY CHILLED (Y) N	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY		18/7/17 @ 14:50
GHD SERVICE CENTRE			
COURIER	MICHAMER	18/7/17 @ 1450	
LABORATORY		18/7/17 16:05	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number: 3134145	GHD Contact: ALAN WILSON
Project: EDITHVALE - LXRA	
GHD Project Manager: JOSEPH HIXSON	GHD Contact: 18/7/17
GHD PM email:	GHD Contact email:

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Lab No. (GHD Use Only)	Sample Matrix (S Soil, W Water, SD Sediment, GW Groundwater)	Container Type (1 Solid, P Plastic bottle, V Vial, G glass bottle)	Number	Volume (mL)	ASS FIELD SCREEN	SAMPLE COMMENTS
ID18-CASS05_QC1	18/7	PM	13	S	B			✓	
_QC2			14					✓	
_QC3			15					✓	
_QC4			16					✓	
_QC5			17					✓	
_QC6			18					✓	
_QC7			19					✓	

TOTAL NUMBER OF SAMPLES:	20
TOTAL NUMBER OF ESKIES:	2
SAMPLES/ESKY CHILLED (Y/N)	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY.		18/7/17 @ 14:50.
GHD SERVICE CENTRE			
COURIER	Molem50	18/7/17 @14:50	
LABORATORY		18/7 1605	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709452**	Page	: 1 of 2
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017 10:00
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 21-Jul-2017 09:43
Sampler	: Joshua Riley		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 4		
No. of samples analysed	: 4		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Client sample ID*	**ID18-CASS05_20.5**	**ID18-CASS05_21.0**	**ID18-CASS05_21.5**	**ID18-CASS05_22.0**	**----**
			Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM1709452-001**	**EM1709452-002**	**EM1709452-003**	**EM1709452-004**	**--------**
				Result	Result	Result	Result	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**7.9**	**8.0**	**7.8**	**7.7**	**----**
pH (Fox)	----	0.1	pH Unit	**5.4**	**5.7**	**5.3**	**5.4**	**----**
Reaction Rate	----	1	-	**2**	**2**	**2**	**2**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709452**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 21-Jul-2017
Sampler	: Joshua Riley		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709452**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Site	: Edithvale LX	Issue Date	: 21-Jul-2017
Sampler	: Joshua Riley	No. of samples received	: 4
Order number	: 60506004.1.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18-CASS05_20.5, ID18-CASS05_21.0, ID18-CASS05_21.5, ID18-CASS05_22.0	**18-Jul-2017**	**20-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709452**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX		
Sampler	: Joshua Riley		

Dates

Date Samples Received	: 19-Jul-2017 10:00	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 0.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709452-001	18-Jul-2017 00:00	ID18-CASS05_20.5	✓
EM1709452-002	18-Jul-2017 00:00	ID18-CASS05_21.0	✓
EM1709452-003	18-Jul-2017 00:00	ID18-CASS05_21.5	✓
EM1709452-004	18-Jul-2017 00:00	ID18-CASS05_22.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number	GHD Contact
3134145	ALAN WILSON
Project: EDITHVALE - LXRA	
GHD Project Manager: JOSEPH HIXSON	GHD Contact: 19/7/17
GHD PM email	GHD Contact email

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

Sample I.D.	Date	Time	Lab ID	Sample No.	Container Type	Container Material	Container Size	Volume (mL)	Analyses Required: AS FIELD SCREEN.	SAMPLE COMMENTS
ID18-CASSO5-20.5	18/7	PM	1	S	B				✓	
-21.0	"	"	2	"	"				✓	
-21.5	"	"	3	"	"				✓	
-22.0	"	"	4	"	"				✓	

TOTAL NUMBER OF SAMPLES: 4

TOTAL NUMBER OF ESKIES: 1

SAMPLES/ESKY CHILLED Y/N: Y

GENERAL COMMENTS:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Environmental Division
Melbourne
Work Order Reference
EM1709452



Telephone : +61-3-8549 9600

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RUEY		19/7/17 @ 9:30
GHD SERVICE CENTRE			
COURIER	Gilbert Roberts (AM)	19-07-17 9.30 am	
LABORATORY		19/7 10:00	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709453**	Page	: 1 of 10
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017 10:00
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017 10:15
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 13		
No. of samples analysed	: 13		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- All jars received with significant headspace. Volatile organics may be compromised as a result.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_0.1	ID46CASS07_0.5	ID46CASS07_0.7	ID46CASS07_0.9	ID46CASS07_1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709453-001	EM1709453-002	EM1709453-003	EM1709453-004	EM1709453-005
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.2	----	6.3	5.9	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		6.2	7.0	----	----	6.4
pH (Fox)	----	0.1	pH Unit		4.8	5.0	----	----	5.0
Reaction Rate	----	1	-		2	2	----	----	2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1	%		2.7	----	2.0	2.9	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	----	<1	<1	----
Copper	7440-50-8	5	mg/kg		12	----	<5	<5	----
Lead	7439-92-1	5	mg/kg		29	----	<5	7	----
Molybdenum	7439-98-7	2	mg/kg		<2	----	<2	<2	----
Nickel	7440-02-0	2	mg/kg		2	----	<2	<2	----
Selenium	7782-49-2	5	mg/kg		<5	----	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	----	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	----	<5	<5	----
Zinc	7440-66-6	5	mg/kg		22	----	<5	21	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		40	----	<40	<40	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_0.1	ID46CASS07_0.5	ID46CASS07_0.7	ID46CASS07_0.9	ID46CASS07_1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709453-001	EM1709453-002	EM1709453-003	EM1709453-004	EM1709453-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	<0.4	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	<0.02	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_0.1	ID46CASS07_0.5	ID46CASS07_0.7	ID46CASS07_0.9	ID46CASS07_1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709453-001	EM1709453-002	EM1709453-003	EM1709453-004	EM1709453-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	<1	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	<1	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	<5	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	<5	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	----	<5	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_0.1	ID46CASS07_0.5	ID46CASS07_0.7	ID46CASS07_0.9	ID46CASS07_1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709453-001	EM1709453-002	EM1709453-003	EM1709453-004	EM1709453-005
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_0.1	ID46CASS07_0.5	ID46CASS07_0.7	ID46CASS07_0.9	ID46CASS07_1
				Client sampling date / time	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00	18-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709453-001	EM1709453-002	EM1709453-003	EM1709453-004	EM1709453-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**76.2**	----	**83.8**	**75.4**	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**95.6**	----	**102**	**97.7**	----
Toluene-D8	2037-26-5	0.1	%		**87.5**	----	**89.2**	**90.5**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**89.2**	----	**98.5**	**95.4**	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		**112**	----	**87.8**	**111**	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**105**	----	**82.8**	**104**	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**101**	----	**85.3**	**96.8**	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		**95.9**	----	**81.8**	**97.0**	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**95.4**	----	**85.2**	**94.5**	----
2-Fluorobiphenyl	321-60-8	0.025	%		**106**	----	**97.7**	**109**	----
Anthracene-d10	1719-06-8	0.025	%		**97.6**	----	**90.3**	**102**	----
4-Terphenyl-d14	1718-51-0	0.025	%		**90.8**	----	**87.3**	**81.2**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_1.5	ID46CASS07_2	ID46CASS07_2.5	ID46CASS07_3	ID46CASS07_3.5
				Client sampling date / time	18-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709453-006	EM1709453-007	EM1709453-008	EM1709453-009	EM1709453-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**6.4**	**8.5**	**5.0**	**6.3**	**5.7**
pH (Fox)	----	0.1	pH Unit		**4.9**	**5.4**	**4.6**	**4.8**	**4.7**
Reaction Rate	----	1	-		**1**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_4	ID46CASS07_4.5	ID46CASS07_5	----	----
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1709453-011	EM1709453-012	EM1709453-013	--------	--------
					Result	Result	Result	----	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.0**	**5.1**	**5.4**	**----**	**----**
pH (Fox)	----	0.1	pH Unit		**4.2**	**4.2**	**4.7**	**----**	**----**
Reaction Rate	----	1	-		**1**	**1**	**1**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709453**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
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Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 19-Jul-2017 10:00
Order number	: 60506004.1.1	Date Analysed	: 20-Jul-2017
C-O-C number	: ----	Date Issued	: 25-Jul-2017 10:15
No. of samples received	: 13		
No. of samples analysed	: 13	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

Results for all samples detailed in this report are below the upper threshold limits for Fill Material.

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID46CASS07_0.1	ID46CASS07_0.7	ID46CASS07_0.9	----	----
			Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
						EM1709453-001	EM1709453-003	EM1709453-004	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**5.2**	**6.3**	**5.9**	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg	----	20000	**12**	<5	<5	----	----
Lead	EG005T	5	mg/kg	----	6000	**29**	<5	**7**	----	----
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	----	----
Nickel	EG005T	2	mg/kg	----	12000	**2**	<2	<2	----	----
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	----	----
Zinc	EG005T	5	mg/kg	----	140000	**22**	<5	**21**	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	**40**	<40	<40	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS07_0.1	ID46CASS07_0.7	ID46CASS07_0.9	----	----
				Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709453-001	EM1709453-003	EM1709453-004	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	<0.03	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	<50	<50	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS07_0.1	ID46CASS07_0.7	ID46CASS07_0.9	----	----
				Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709453-001	EM1709453-003	EM1709453-004	--------	--------
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit		4	9	**5.2**	**6.3**	**5.9**	----	----
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	500	<5	<5	<5	----	----
Cadmium	EG005T	1	mg/kg		----	100	<1	<1	<1	----	----
Copper	EG005T	5	mg/kg		----	5000	**12**	<5	<5	----	----
Lead	EG005T	5	mg/kg		----	1500	**29**	<5	**7**	----	----
Molybdenum	EG005T	2	mg/kg		----	1000	<2	<2	<2	----	----
Nickel	EG005T	2	mg/kg		----	3000	**2**	<2	<2	----	----
Selenium	EG005T	5	mg/kg		----	50	<5	<5	<5	----	----
Silver	EG005T	2	mg/kg		----	180	<2	<2	<2	----	----
Tin	EG005T	5	mg/kg		----	500	<5	<5	<5	----	----
Zinc	EG005T	5	mg/kg		----	35000	**22**	<5	**21**	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	75	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	500	<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	2500	<1	<1	<1	----	----
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg		----	10000	**40**	<40	<40	----	----
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg		----	4	<0.2	<0.2	<0.2	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg		----	70	<0.2	<0.2	<0.2	----	----
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg		----	1.2	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg		----	2.8	<0.02	<0.02	<0.02	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg		----	10	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg		----	560	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	5	<0.5	<0.5	<0.5	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID46CASS07_0.1	ID46CASS07_0.7	ID46CASS07_0.9	----	----
				Sampling date/time			18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709453-001	EM1709453-003	EM1709453-004	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	<0.5	<0.5	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.03	<0.03	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	<10	<10	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	<50	<50	<50	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID46CASS07_ 0.1**	**ID46CASS07_ 0.7**	**ID46CASS07_ 0.9**	**----**	**----**
						Sampling date/time 18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
						EM1709453-001	**EM1709453-003**	**EM1709453-004**	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.2**	**6.3**	**5.9**	**----**	**----**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	<5	**----**	**----**
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	**----**	**----**
Copper	EG005T	5	mg/kg	----	100	**12**	<5	<5	**----**	**----**
Lead	EG005T	5	mg/kg	----	300	**29**	<5	**7**	**----**	**----**
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	**----**	**----**
Nickel	EG005T	2	mg/kg	----	60	**2**	<2	<2	**----**	**----**
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	**----**	**----**
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	**----**	**----**
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	**----**	**----**
Zinc	EG005T	5	mg/kg	----	200	**22**	<5	**21**	**----**	**----**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	**----**	**----**
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	**----**	**----**
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	**----**	**----**
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	**40**	<40	<40	**----**	**----**
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	**----**	**----**
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	**----**	**----**
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	**----**	**----**
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	**----**	**----**
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	**----**	**----**
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	**----**	**----**
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	**----**	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID46CASS07_ 0.1**	**ID46CASS07_ 0.7**	**ID46CASS07_ 0.9**	**----**	**----**
						Sampling date/time 18-Jul-2017	18-Jul-2017	18-Jul-2017	----	----
						EM1709453-001	**EM1709453-003**	**EM1709453-004**	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	**----**	**----**
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	<50	<50	**----**	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709453**	Page	: 1 of 13
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
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Project	: 3134145	Date Samples Received	: 19-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 13		
No. of samples analysed	: 13		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1010052)									
EM1709392-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	8.1	8.3	2.44	0% - 20%
EM1709392-011	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1007408)									
EM1709453-001	ID46CASS07_0.1	EA055: Moisture Content	----	1	%	2.7	2.5	7.79	No Limit
EM1709459-004	Anonymous	EA055: Moisture Content	----	1	%	20.5	19.3	5.76	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1007368)									
EM1709453-001	ID46CASS07_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	29	31	8.04	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	24	5.72	No Limit
EM1709478-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	5	<2	90.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	16	81.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1007368) - continued									
EM1709478-004	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	16	19	12.7	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1007367)									
EM1709453-001	ID46CASS07_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709478-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1007946)									
EM1709392-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709456-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1009981)									
EM1709392-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1709456-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1007975)									
EM1709453-001	ID46CASS07_0.1	EK040T: Fluoride	16984-48-8	40	mg/kg	40	<40	0.00	No Limit
EM1709475-007	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	190	320	49.2	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1006871)									
EM1709392-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709475-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1006779) - continued									
EM1709416-024	Anonymous	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1006869) - continued									
EM1709392-001	Anonymous	EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<11	<11	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1006869) - continued									
EM1709392-001	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1006869) - continued									
EM1709392-001	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006870)									
EM1709392-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709475-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	110	<100	11.2	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006870) - continued									
EM1709475-002	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006870)									
EM1709392-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709475-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	130	<100	27.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1007368)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.0	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	90.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	96.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	98.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.5	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	80.9	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	97.9	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1007367)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1007946)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	84.9	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1009981)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	88.0	80	110
EK040T: Fluoride Total (QCLot: 1007975)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	90.9	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006871)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	72.1	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1006779)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	106	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	99.8	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	101	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	96.9	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	100	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	96.5	70	116
EP074H: Naphthalene (QCLot: 1006779)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	96.0	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1006779)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	114	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	112	62	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1006779) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	102	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	113	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	103	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	101	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	105	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	106	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	103	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	101	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.0	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	97.2	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	105	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.7	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	96.8	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.8	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1006869)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.9	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	86.3	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	91.1	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	88.2	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.3	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	92.9	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.2	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	93.6	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	89.1	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1006869)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.7	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	79.3	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.7	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	84.5	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	102	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	31.3	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	94.8	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	76.5	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	59.6	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	43.7	12	132

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1006869)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.3	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.8	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	95.8	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	118	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.2	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	93.4	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	95.7	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	95.4	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	97.6	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	99.7	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	102	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	98.2	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	95.7	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.5	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	96.3	55	137
EP075I: Organochlorine Pesticides (QCLot: 1006869)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	93.6	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	88.7	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	96.0	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	93.8	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	89.4	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	84.2	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	89.6	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	87.1	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	87.2	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	88.0	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	71.9	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	85.1	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	89.5	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	120	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	92.8	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	91.8	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	96.1	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	88.6	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	84.2	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	88.3	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	90.2	69	114

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006870)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	95.1	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	93.0	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	93.6	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006779)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	88.8	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006870)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	94.0	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	93.2	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	92.2	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1007368)							
EM1709453-003	ID46CASS07_0.7	EG005T: Arsenic	7440-38-2	50 mg/kg	99.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	99.4	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.7	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	95.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	92.9	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	93.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	97.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1007367)							
EM1709453-003	ID46CASS07_0.7	EG035T: Mercury	7439-97-6	5 mg/kg	82.9	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1007946)							
EM1709392-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	60.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1009981)							
EM1709392-005	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	98.4	77	113
EK040T: Fluoride Total (QCLot: 1007975)							
EM1709453-003	ID46CASS07_0.7	EK040T: Fluoride	16984-48-8	400 mg/kg	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006871)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006871) - continued							
EM1709392-011	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	41.3	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1006779)							
EM1709453-001	ID46CASS07_0.1	EP074-UT: Benzene	71-43-2	2 mg/kg	103	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	106	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1006779)							
EM1709453-001	ID46CASS07_0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	104	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	106	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1006869)							
EM1709392-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	102	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	75.7	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	66.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1006869)							
EM1709392-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	82.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	70.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1006869)							
EM1709392-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	111	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	126	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779)							
EM1709453-001	ID46CASS07_0.1	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	95.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006870)							
EM1709392-008	Anonymous	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	94.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	92.3	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	93.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006779)							
EM1709453-001	ID46CASS07_0.1	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	92.8	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006870)							
EM1709392-008	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	93.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	92.6	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	96.1	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709453**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Site	: Bonbeach LX	Issue Date	: 25-Jul-2017
Sampler	: ADW	No. of samples received	: 13
Order number	: 60506004.1.1	No. of samples analysed	: 13

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**24-Jul-2017**	25-Jul-2017	✓	**24-Jul-2017**	24-Jul-2017	✓
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID46CASS07_0.1, ID46CASS07_1,	ID46CASS07_0.5, ID46CASS07_1.5	**18-Jul-2017**	**20-Jul-2017**	14-Jan-2018	✓	**20-Jul-2017**	14-Jan-2018	✓
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID46CASS07_2, ID46CASS07_3, ID46CASS07_4, ID46CASS07_5	ID46CASS07_2.5, ID46CASS07_3.5, ID46CASS07_4.5,	**19-Jul-2017**	**20-Jul-2017**	15-Jan-2018	✓	**20-Jul-2017**	15-Jan-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**----**	----	----	**20-Jul-2017**	01-Aug-2017	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**21-Jul-2017**	14-Jan-2018	✓	**21-Jul-2017**	14-Jan-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**21-Jul-2017**	15-Aug-2017	✓	**21-Jul-2017**	15-Aug-2017	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**21-Jul-2017**	15-Aug-2017	✓	**21-Jul-2017**	28-Jul-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**21-Jul-2017**	01-Aug-2017	✓	**24-Jul-2017**	04-Aug-2017	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**21-Jul-2017**	15-Aug-2017	✓	**24-Jul-2017**	15-Aug-2017	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID46CASS07_0.1, ID46CASS07_0.9	ID46CASS07_0.7,	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM)							
ID46CASS07_0.1, ID46CASS07_0.7, ID46CASS07_0.9	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS07_0.1, ID46CASS07_0.7, ID46CASS07_0.9	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM)							
ID46CASS07_0.1, ID46CASS07_0.7, ID46CASS07_0.9	**18-Jul-2017**	**20-Jul-2017**	01-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT)							
ID46CASS07_0.1, ID46CASS07_0.7, ID46CASS07_0.9	**18-Jul-2017**	**20-Jul-2017**	25-Jul-2017	✓	**21-Jul-2017**	25-Jul-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709453**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 19-Jul-2017 10:00	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 4.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 13 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1709453-001	18-Jul-2017 00:00	ID46CASS07_0.1		✓	✓	✓
EM1709453-002	18-Jul-2017 00:00	ID46CASS07_0.5		✓		
EM1709453-003	18-Jul-2017 00:00	ID46CASS07_0.7			✓	✓
EM1709453-004	18-Jul-2017 00:00	ID46CASS07_0.9	✓			
EM1709453-005	18-Jul-2017 00:00	ID46CASS07_1		✓		
EM1709453-006	18-Jul-2017 00:00	ID46CASS07_1.5		✓		
EM1709453-007	19-Jul-2017 00:00	ID46CASS07_2		✓		
EM1709453-008	19-Jul-2017 00:00	ID46CASS07_2.5		✓		
EM1709453-009	19-Jul-2017 00:00	ID46CASS07_3		✓		
EM1709453-010	19-Jul-2017 00:00	ID46CASS07_3.5		✓		
EM1709453-011	19-Jul-2017 00:00	ID46CASS07_4		✓		
EM1709453-012	19-Jul-2017 00:00	ID46CASS07_4.5		✓		
EM1709453-013	19-Jul-2017 00:00	ID46CASS07_5		✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709453**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 19-Jul-2017 10:00	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 4.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 13 / 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 WRG 621
EM1709453-001	18-Jul-2017 00:00	ID46CASS07_0.1	✓	✓	✓
EM1709453-002	18-Jul-2017 00:00	ID46CASS07_0.5	✓		
EM1709453-003	18-Jul-2017 00:00	ID46CASS07_0.7		✓	✓
EM1709453-004	18-Jul-2017 00:00	ID46CASS07_0.9		✓	✓
EM1709453-005	18-Jul-2017 00:00	ID46CASS07_1	✓		
EM1709453-006	18-Jul-2017 00:00	ID46CASS07_1.5	✓		
EM1709453-007	19-Jul-2017 00:00	ID46CASS07_2	✓		
EM1709453-008	19-Jul-2017 00:00	ID46CASS07_2.5	✓		
EM1709453-009	19-Jul-2017 00:00	ID46CASS07_3	✓		
EM1709453-010	19-Jul-2017 00:00	ID46CASS07_3.5	✓		
EM1709453-011	19-Jul-2017 00:00	ID46CASS07_4	✓		
EM1709453-012	19-Jul-2017 00:00	ID46CASS07_4.5	✓		
EM1709453-013	19-Jul-2017 00:00	ID46CASS07_5	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
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- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
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- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

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- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
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- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number: 3134145	GHD Office: MelG
Project: Barbeach LX Removal	
GHD Project Manager: J. Hixon	GHD Contact: A Wilson
Requested Completion Date: Standard	Quote No./GHD Reference

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results.**
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Lab ID* Composite Sample	Sample Matrix S: Soil SL: Sludge W: Water A: Air GW: Groundwater	Preservative	Container Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS Field screen	LWRG621	Remarks
ID46CBSS07-0.1	18/7/17	Pm	1	S		BJ			✓	✓	
-0.5			2			B			✓		
-0.7			3			BJ				✓	
-0.9			4			J					
-1			5			B			✓		
-1.5			6			B			✓		
-2	19/7/17	Am	7						✓		
2.5			8						✓		
3			9						✓		
3.5			10						✓		
4			11						✓		
4.5			12						✓		
5			13						✓		

Environmental Division
Melbourne
Work Order Reference
EM1709453

Telephone : + 61-3-8549 9600

Sampled by: ADW	Date/Time 18/7/17	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier: Cellmast	Date/Time 09-15 19	Relinquished by:	Date/Time
Received by Lab: Karl (Ally)	Date/Time 19/7, 10.00		

Remarks:

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709491**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017 15:20
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 21-Jul-2017 09:44
Sampler	: ALAN WILSON		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 21		
No. of samples analysed	: 21		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_5.5	DUP1_190717	ID46CASS07_6	ID46CASS07_6.5	ID46CASS07_7
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709491-001	EM1709491-002	EM1709491-003	EM1709491-004	EM1709491-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**6.6**	**8.1**	**8.4**	**8.7**	**8.9**
pH (Fox)	----	0.1	pH Unit		**5.0**	**1.6**	**6.0**	**5.8**	**6.0**
Reaction Rate	----	1	-		**1**	**2**	**1**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS07_7.4	ID46CASS07_8	ID46CASS07_8.5	ID46CASS07_9	ID46CASS07_9.5
			Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709491-006	EM1709491-007	EM1709491-008	EM1709491-009	EM1709491-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.2**	**8.6**	**8.1**	**8.8**	**8.9**
pH (Fox)	----	0.1	pH Unit	**4.8**	**5.6**	**2.2**	**5.7**	**5.8**
Reaction Rate	----	1	-	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS07_10	ID46CASS07_10.5	ID46CASS07_11	ID46CASS07_11.5	ID46CASS07_12
			Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709491-011	EM1709491-012	EM1709491-013	EM1709491-014	EM1709491-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.9**	**8.3**	**8.3**	**8.3**	**9.2**
pH (Fox)	----	0.1	pH Unit	**5.6**	**2.0**	**1.4**	**2.1**	**8.0**
Reaction Rate	----	1	-	**2**	**4**	**2**	**4**	**4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_12.5	ID46CASS07_13	ID46CASS07_13.5	ID46CASS07_14	ID46CASS07_15
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709491-016	EM1709491-017	EM1709491-018	EM1709491-019	EM1709491-020
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.8**	**8.3**	**8.4**	**8.4**	**9.0**
pH (Fox)	----	0.1	pH Unit		**7.8**	**5.2**	**5.9**	**2.1**	**2.1**
Reaction Rate	----	1	-		**4**	**2**	**2**	**4**	**4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS07_14.5	----	----	----	----
				Client sampling date / time	19-Jul-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1709491-021	--------	--------	--------	--------
					Result	----	----	----	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.2**	----	----	----	----
pH (Fox)	----	0.1	pH Unit		**2.1**	----	----	----	----
Reaction Rate	----	1	-		**4**	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709491**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 21-Jul-2017
Sampler	: ALAN WILSON		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 21		
No. of samples analysed	: 21		

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Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709491**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Site	: Bonbeach LX	Issue Date	: 21-Jul-2017
Sampler	: ALAN WILSON	No. of samples received	: 21
Order number	: 60506004.1.1	No. of samples analysed	: 21

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID46CASS07_5.5, DUP1_190717, ID46CASS07_6, ID46CASS07_6.5, ID46CASS07_7, ID46CASS07_7.4, ID46CASS07_8, ID46CASS07_8.5, ID46CASS07_9, ID46CASS07_9.5, ID46CASS07_10, ID46CASS07_10.5, ID46CASS07_11, ID46CASS07_11.5, ID46CASS07_12, ID46CASS07_12.5, ID46CASS07_13, ID46CASS07_13.5, ID46CASS07_14, ID46CASS07_15, ID46CASS07_14.5	**19-Jul-2017**	**20-Jul-2017**	15-Jan-2018	✓	**20-Jul-2017**	15-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709491**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ALAN WILSON		

Dates

Date Samples Received	: 19-Jul-2017 15:20	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 5.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 21 / 21

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709491-001	19-Jul-2017 00:00	ID46CASS07_5.5	✓
EM1709491-002	19-Jul-2017 00:00	DUP1_190717	✓
EM1709491-003	19-Jul-2017 00:00	ID46CASS07_6	✓
EM1709491-004	19-Jul-2017 00:00	ID46CASS07_6.5	✓
EM1709491-005	19-Jul-2017 00:00	ID46CASS07_7	✓
EM1709491-006	19-Jul-2017 00:00	ID46CASS07_7.4	✓
EM1709491-007	19-Jul-2017 00:00	ID46CASS07_8	✓
EM1709491-008	19-Jul-2017 00:00	ID46CASS07_8.5	✓
EM1709491-009	19-Jul-2017 00:00	ID46CASS07_9	✓
EM1709491-010	19-Jul-2017 00:00	ID46CASS07_9.5	✓
EM1709491-011	19-Jul-2017 00:00	ID46CASS07_10	✓
EM1709491-012	19-Jul-2017 00:00	ID46CASS07_10.5	✓
EM1709491-013	19-Jul-2017 00:00	ID46CASS07_11	✓
EM1709491-014	19-Jul-2017 00:00	ID46CASS07_11.5	✓
EM1709491-015	19-Jul-2017 00:00	ID46CASS07_12	✓
EM1709491-016	19-Jul-2017 00:00	ID46CASS07_12.5	✓
EM1709491-017	19-Jul-2017 00:00	ID46CASS07_13	✓
EM1709491-018	19-Jul-2017 00:00	ID46CASS07_13.5	✓
EM1709491-019	19-Jul-2017 00:00	ID46CASS07_14	✓
EM1709491-020	19-Jul-2017 00:00	ID46CASS07_15	✓
EM1709491-021	19-Jul-2017 00:00	ID46CASS07_14.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number: 3134145	GHD Office: Melbourne
Project: Barbeach Lx Removal	
GHD Project Manager: J. Hixon	GHD Contact: A.Wilson
Requested Completion Date: Standard	Quote No./GHD Reference

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results**.
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Lab ID (Composite / Sample)	Sample Matrix (S: Soil, SL: Sludge, W: Water, A: Air, GW: Groundwater)	Preservative	Container Type (J: soil jar, B: bag, V: vial, G: glass bottle, P: plastic bottle)	Container Number	Container Volume (mL)	Ass field screen	Remarks
ID46Class0t-5.5	19/7/17	Am	1	S		B			✓	
DUP1-190717			2						✓	
ID46Class0t-6			3						✓	
6.5			4						✓	
7			5						✓	
7.4			6						✓	
8			7						✓	
8.5			8						✓	
9			9						✓	
9.5			10						✓	
10			11						✓	
10.5			12						✓	
11			13						✓	
11.5			14						✓	
12			15						✓	
12.5			16						✓	

Environmental Division
Melbourne
Work Order Reference
EM1709491

Telephone : + 61-3-8549 9600

Sampled by: A Wilson	Date/Time 19/7/17 ; Am/pm	Relinquished by:	Date/Time
Received by: JOHN NET 107	Date/Time	Relinquished by:	Date/Time
Received by Courier: 19/7/17	Date/Time	Relinquished by:	Date/Time
Received by Lab:	Date/Time 19/7 15:20		
Remarks:			

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number	GHD Office
Project	
GHD Project Manager	GHD Contact
Requested Completion Date	Quote No./GHD Reference

Laboratory:

Address:

Laboratory Contact:

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results.**
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Lab ID (Laboratory Sample)	Sample Matrix S: Soil SL: Sludge W: Water A: Air GW: Groundwater	Preservative	Container Type B: bag J: soil jar V: Vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: Has field screen	Remarks
1D46CASS07_13	19/7/17	Pm	17	S		B			✓	
13.5			18						✓	
14			19						✓	
15			20						✓	
Extra Sample:										
1D46CASS07_14.5	19/7/17		21	S		B				

Sampled by:	Date/Time	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier:	Date/Time	Relinquished by:	Date/Time
Received by Lab: [illegible] (AM)	Date/Time 19/7 15:20		
Remarks:			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709495**	Page	: 1 of 10
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017 15:20
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017 10:44
Sampler	: JJR		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 15		
No. of samples analysed	: 15		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Jar received with significant headspace. Volatile orgaincs may be compromised as a result.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18-CASS06_1.5	ID18-CASS06_2.0	ID18-CASS06_2.5	ID18-CASS06_3.0	ID18-CASS06_3.5
			Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709495-001	EM1709495-002	EM1709495-003	EM1709495-004	EM1709495-005
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.2	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.5	5.1	5.1	5.3	4.4
pH (Fox)	----	0.1	pH Unit	4.5	4.4	4.5	4.8	4.4
Reaction Rate	----	1	-	1	1	1	2	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1	%	<1.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	<40	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_1.5	ID18-CASS06_2.0	ID18-CASS06_2.5	ID18-CASS06_3.0	ID18-CASS06_3.5
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709495-001	EM1709495-002	EM1709495-003	EM1709495-004	EM1709495-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_1.5	ID18-CASS06_2.0	ID18-CASS06_2.5	ID18-CASS06_3.0	ID18-CASS06_3.5
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709495-001	EM1709495-002	EM1709495-003	EM1709495-004	EM1709495-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_1.5	ID18-CASS06_2.0	ID18-CASS06_2.5	ID18-CASS06_3.0	ID18-CASS06_3.5
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709495-001	EM1709495-002	EM1709495-003	EM1709495-004	EM1709495-005
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_1.5	ID18-CASS06_2.0	ID18-CASS06_2.5	ID18-CASS06_3.0	ID18-CASS06_3.5
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709495-001	EM1709495-002	EM1709495-003	EM1709495-004	EM1709495-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		102	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		96.4	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		88.5	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		98.5	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		97.1	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		106	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		91.0	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		93.0	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		98.7	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		103	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		90.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		102	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18-CASS06_4.0	ID18-CASS06_4.5	ID18-CASS06_5.0	ID18-CASS06_5.5	ID18-CASS06_6.0
			Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709495-006	EM1709495-007	EM1709495-008	EM1709495-009	EM1709495-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**4.4**	**6.9**	**6.2**	**6.0**	**7.1**
pH (Fox)	----	0.1	pH Unit	**3.9**	**5.0**	**4.1**	**4.5**	**5.5**
Reaction Rate	----	1	-	**1**	**2**	**1**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_6.5	ID18-CASS06_7.0	ID18-CASS06_7.5	ID18-CASS06_8.0	ID18-CASS06_8.5
				Client sampling date / time	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00	19-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709495-011	EM1709495-012	EM1709495-013	EM1709495-014	EM1709495-015
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**7.4**	**7.6**	**7.8**	**8.4**	**8.6**
pH (Fox)	----	0.1	pH Unit		**4.5**	**5.5**	**5.4**	**1.4**	**4.4**
Reaction Rate	----	1	-		**1**	**1**	**2**	**2**	**2**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709495**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 19-Jul-2017 15:20
Order number	: 60506004.1.1	Date Analysed	: 20-Jul-2017
C-O-C number	: ----	Date Issued	: 25-Jul-2017 10:44
No. of samples received	: 15		
No. of samples analysed	: 15	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

Results for all samples detailed in this report are below the upper threshold limits for Fill Material.

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18-CASS06_1.5	----	----	----	----
				Sampling date/time		19-Jul-2017	----	----	----	----
						EM1709495-001	--------	--------	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**4.2**	----	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	400	<1	----	----	----	----
Copper	EG005T	5	mg/kg	----	20000	<5	----	----	----	----
Lead	EG005T	5	mg/kg	----	6000	<5	----	----	----	----
Molybdenum	EG005T	2	mg/kg	----	4000	<2	----	----	----	----
Nickel	EG005T	2	mg/kg	----	12000	<2	----	----	----	----
Selenium	EG005T	5	mg/kg	----	200	<5	----	----	----	----
Silver	EG005T	2	mg/kg	----	720	<2	----	----	----	----
Zinc	EG005T	5	mg/kg	----	140000	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	----	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	<40	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	----	----	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	----	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18-CASS06_1.5	----	----	----	----
				Sampling date/time			19-Jul-2017	----	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709495-001	--------	--------	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	----	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18-CASS06_1.5	----	----	----	----
				Sampling date/time			19-Jul-2017	----	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709495-001	--------	--------	--------	--------
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit		4	9	**4.2**	----	----	----	----
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	500	<5	----	----	----	----
Cadmium	EG005T	1	mg/kg		----	100	<1	----	----	----	----
Copper	EG005T	5	mg/kg		----	5000	<5	----	----	----	----
Lead	EG005T	5	mg/kg		----	1500	<5	----	----	----	----
Molybdenum	EG005T	2	mg/kg		----	1000	<2	----	----	----	----
Nickel	EG005T	2	mg/kg		----	3000	<2	----	----	----	----
Selenium	EG005T	5	mg/kg		----	50	<5	----	----	----	----
Silver	EG005T	2	mg/kg		----	180	<2	----	----	----	----
Tin	EG005T	5	mg/kg		----	500	<5	----	----	----	----
Zinc	EG005T	5	mg/kg		----	35000	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	75	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	500	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	2500	<1	----	----	----	----
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg		----	10000	<40	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg		----	4	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg		----	70	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg		----	1.2	<0.02	----	----	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg		----	2.8	<0.02	----	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg		----	10	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg		----	560	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	5	<0.5	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18-CASS06_1.5	----	----	----	----
						Sampling date/time: 19-Jul-2017	----	----	----	----
						EM1709495-001	--------	--------	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	----	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	<50	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18-CASS06_1.5 / 19-Jul-2017 / **EM1709495-001**	---- / ---- / --------	---- / ---- / --------	---- / ---- / --------	---- / ---- / --------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**4.2**	----	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	3	<1	----	----	----	----
Copper	EG005T	5	mg/kg	----	100	<5	----	----	----	----
Lead	EG005T	5	mg/kg	----	300	<5	----	----	----	----
Molybdenum	EG005T	2	mg/kg	----	40	<2	----	----	----	----
Nickel	EG005T	2	mg/kg	----	60	<2	----	----	----	----
Selenium	EG005T	5	mg/kg	----	10	<5	----	----	----	----
Silver	EG005T	2	mg/kg	----	10	<2	----	----	----	----
Tin	EG005T	5	mg/kg	----	50	<5	----	----	----	----
Zinc	EG005T	5	mg/kg	----	200	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	----	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	<40	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18-CASS06_1.5	**----**	**----**	**----**	**----**
						19-Jul-2017	----	----	----	----
						EM1709495-001	**--------**	**--------**	**--------**	**--------**
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	**----**	**----**	**----**	**----**
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	**----**	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	**----**	**----**	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	**----**	**----**	**----**	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709495**	Page	: 1 of 13
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 20-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017
Sampler	: JJR		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 15		
No. of samples analysed	: 15		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1010055)									
EM1709480-026	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EM1709564-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.2	5.3	1.90	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1007411)									
EM1709480-015	Anonymous	EA055: Moisture Content	----	1	%	14.6	14.4	1.15	0% - 50%
EM1709480-025	Anonymous	EA055: Moisture Content	----	1	%	19.5	20.0	2.65	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1007963)									
EM1709492-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	13	13	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	10	30.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	26	16.5	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1007962)									
EM1709492-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1007947)									
EM1709475-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709492-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1009982)									
EM1709480-018	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1709564-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EK040T: Fluoride Total (QC Lot: 1007976)									
EM1709492-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	150	120	19.5	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1006871)									
EM1709392-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709475-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1006779) - continued									
EM1709416-024	Anonymous	EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1006869) - continued									
EM1709475-002	Anonymous	EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<11	<11	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<11	<11	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1006869) - continued									
EM1709392-001	Anonymous	EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1006869)									
EM1709392-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1709475-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1006869) - continued									
EM1709475-002	Anonymous	EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1006870)									
EM1709392-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709475-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	110	<100	11.2	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006779)									
EM1709416-024	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1709480-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006870)									
EM1709392-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709475-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	130	<100	27.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1006870) - continued									
EM1709475-002	Anonymous	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1007963)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	86.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	87.4	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	93.2	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	93.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	94.6	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	103	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.1	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1007962)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1007947)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	86.3	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1009982)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	87.1	80	110
EK040T: Fluoride Total (QCLot: 1007976)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	77.9	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006871)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	72.1	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1006779)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	106	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	99.8	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	101	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	96.9	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	100	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	96.5	70	116
EP074H: Naphthalene (QCLot: 1006779)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	96.0	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1006779)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	114	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	112	62	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1006779) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	102	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	113	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	103	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	101	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	105	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	106	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	103	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	101	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.0	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	97.2	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	105	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.7	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	96.8	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.8	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1006869)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.9	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	86.3	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	91.1	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	88.2	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.3	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	92.9	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.2	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	93.6	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	89.1	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1006869)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.7	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	79.3	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.7	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	84.5	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	102	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	31.3	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	94.8	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	76.5	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	59.6	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	43.7	12	132

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1006869)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.3	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.8	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	95.8	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	118	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.2	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	93.4	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	95.7	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	95.4	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	97.6	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	99.7	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	102	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	98.2	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	95.7	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.5	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	96.3	55	137
EP075I: Organochlorine Pesticides (QCLot: 1006869)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	93.6	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	88.7	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	96.0	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	93.8	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	89.4	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	84.2	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	89.6	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	87.1	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	87.2	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	88.0	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	71.9	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	85.1	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	89.5	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	120	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	92.8	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	91.8	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	96.1	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	88.6	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	84.2	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	88.3	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	90.2	69	114

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006870)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	95.1	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	93.0	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	93.6	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006779)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	88.8	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006870)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	94.0	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	93.2	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	92.2	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1007963)							
EM1709495-001	ID18-CASS06_1.5	EG005T: Arsenic	7440-38-2	50 mg/kg	96.1	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.5	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	94.8	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	94.1	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	90.5	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	90.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	89.1	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	93.8	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1007962)							
EM1709495-001	ID18-CASS06_1.5	EG035T: Mercury	7439-97-6	5 mg/kg	84.1	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1007947)							
EM1709479-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	62.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1009982)							
EM1709480-022	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	89.2	77	113
EK040T: Fluoride Total (QCLot: 1007976)							
EM1709495-001	ID18-CASS06_1.5	EK040T: Fluoride	16984-48-8	400 mg/kg	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006871)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1006871) - continued							
EM1709392-011	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	41.3	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	103	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	106	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	104	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	106	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	112	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1006869)							
EM1709392-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	102	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	75.7	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	66.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1006869)							
EM1709392-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	82.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	70.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1006869)							
EM1709392-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	111	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	126	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	95.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1006870)							
EM1709392-008	Anonymous	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	94.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	92.3	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	93.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006779)							
EM1709453-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	92.8	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1006870)							
EM1709392-008	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	93.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	92.6	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	96.1	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709495**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 19-Jul-2017
Site	: Edithvale LX	Issue Date	: 25-Jul-2017
Sampler	: JJR	No. of samples received	: 15
Order number	: 60506004.1.1	No. of samples analysed	: 15

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
ID18-CASS06_1.5	**19-Jul-2017**	**24-Jul-2017**	26-Jul-2017	✓	**24-Jul-2017**	24-Jul-2017	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18-CASS06_1.5, ID18-CASS06_2.0, ID18-CASS06_2.5, ID18-CASS06_3.0, ID18-CASS06_3.5, ID18-CASS06_4.0, ID18-CASS06_4.5, ID18-CASS06_5.0, ID18-CASS06_5.5, ID18-CASS06_6.0, ID18-CASS06_6.5, ID18-CASS06_7.0, ID18-CASS06_7.5, ID18-CASS06_8.0, ID18-CASS06_8.5	**19-Jul-2017**	**20-Jul-2017**	15-Jan-2018	✓	**20-Jul-2017**	15-Jan-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
ID18-CASS06_1.5	**19-Jul-2017**	**----**	----	----	**20-Jul-2017**	02-Aug-2017	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
ID18-CASS06_1.5	**19-Jul-2017**	**21-Jul-2017**	15-Jan-2018	✓	**21-Jul-2017**	15-Jan-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
ID18-CASS06_1.5	**19-Jul-2017**	**21-Jul-2017**	16-Aug-2017	✓	**24-Jul-2017**	16-Aug-2017	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G)							
ID18-CASS06_1.5	**19-Jul-2017**	**21-Jul-2017**	16-Aug-2017	✓	**21-Jul-2017**	28-Jul-2017	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
ID18-CASS06_1.5	**19-Jul-2017**	**21-Jul-2017**	02-Aug-2017	✓	**24-Jul-2017**	04-Aug-2017	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T)							
ID18-CASS06_1.5	**19-Jul-2017**	**21-Jul-2017**	16-Aug-2017	✓	**24-Jul-2017**	16-Aug-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	26-Jul-2017	✓	**21-Jul-2017**	26-Jul-2017	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	26-Jul-2017	✓	**21-Jul-2017**	26-Jul-2017	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	26-Jul-2017	✓	**21-Jul-2017**	26-Jul-2017	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	26-Jul-2017	✓	**21-Jul-2017**	26-Jul-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	02-Aug-2017	✓	**20-Jul-2017**	29-Aug-2017	✓
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18-CASS06_1.5	**19-Jul-2017**	**20-Jul-2017**	26-Jul-2017	✓	**21-Jul-2017**	26-Jul-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709495**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX		
Sampler	: JJR		

Dates

Date Samples Received	: 19-Jul-2017 15:20	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 2.9°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 15 / 15

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 WRG 621
EM1709495-001	19-Jul-2017 00:00	ID18-CASS06_1.5	✓	✓	✓
EM1709495-002	19-Jul-2017 00:00	ID18-CASS06_2.0	✓		
EM1709495-003	19-Jul-2017 00:00	ID18-CASS06_2.5	✓		
EM1709495-004	19-Jul-2017 00:00	ID18-CASS06_3.0	✓		
EM1709495-005	19-Jul-2017 00:00	ID18-CASS06_3.5	✓		
EM1709495-006	19-Jul-2017 00:00	ID18-CASS06_4.0	✓		
EM1709495-007	19-Jul-2017 00:00	ID18-CASS06_4.5	✓		
EM1709495-008	19-Jul-2017 00:00	ID18-CASS06_5.0	✓		
EM1709495-009	19-Jul-2017 00:00	ID18-CASS06_5.5	✓		
EM1709495-010	19-Jul-2017 00:00	ID18-CASS06_6.0	✓		
EM1709495-011	19-Jul-2017 00:00	ID18-CASS06_6.5	✓		
EM1709495-012	19-Jul-2017 00:00	ID18-CASS06_7.0	✓		
EM1709495-013	19-Jul-2017 00:00	ID18-CASS06_7.5	✓		
EM1709495-014	19-Jul-2017 00:00	ID18-CASS06_8.0	✓		
EM1709495-015	19-Jul-2017 00:00	ID18-CASS06_8.5	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 3/1 Burma Road Pooraka SA 5095 Ph: 08 8162 5130 E: adelaide@alsglobal.com

☐BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Gladstone QLD 4680 Ph: 07 4978 7944 E: ALSEnviro.Gladstone@alsglobal.com

☐MACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740 Ph: 07 4952 5795 E: ALSEnviro.Mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: ALSEnviro.Townsville@alsglobal.com

☐WOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: AHD	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: BDITHDALE – LXRA		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes No N/A
PROJECT: 3136 91495 **PROJECT NO.:**	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: **PURCHASE ORDER NO.:**	**COUNTRY OF ORIGIN:**	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: ALAN WILSON **CONTACT PH:**		OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER:	**SAMPLER MOBILE:**	**RELINQUISHED BY:**	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
COC Emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**				
Email Reports to (will default to PM if no other addresses are listed):		DATE/TIME:	DATE/TIME: 19/7, 15:20	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	ASS Field Screen	P-16							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	ID18-CASS06_1.S	19/7/17	S	B + S	2	✓	✓							
2	ID18-CASS06_2.0		S	B	1	✓								
3	ID18-CASS06_2.S		S	B	1	✓								
4	ID18-CASS06_3.0		S	B	1	✓								
5	ID18-CASS06_3.S		S	B	1	✓								
6	ID18-CASS06_4.0		S	B	1	✓								
7	ID18-CASS06_4.S		S	B	1	✓								
8	ID18-CASS06_5.0		S	B	1	✓								
9	ID18-CASS06_5.S		S	B	1	✓								
10	ID18-CASS06_6.0		S	B	1	✓								
11	ID18-CASS06_6.S		S	B	1	✓								
12	ID18-CASS06_7.0	↓	S	B	1	✓								
				TOTAL										

Environmental Division
Melbourne
Work Order Reference
EM1709495

Telephone : + 61-3-8549 9600

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 3/1 Burma Road Pooraka SA 5095 Ph: 08 8162 5130 E: adelaide@alsglobal.com

☐BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 48 Callemondah Drive Gladstone QLD 4680 Ph: 07 4978 7944 E: ALSEnviro.Gladstone@alsglobal.com

☐MACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740 Ph: 07 4952 5795 E: ALSEnviro.Mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: ALSEnviro.Townsville@alsglobal.com

☐WOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT:	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE:		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: **PROJECT NO.:**	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: **PURCHASE ORDER NO.:**	**COUNTRY OF ORIGIN:**	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: **CONTACT PH:**		OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: **SAMPLER MOBILE:**	**RELINQUISHED BY:**	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
COC Emailed to ALS? (YES / NO) **EDD FORMAT (or default):**				
Email Reports to (will default to PM if no other addresses are listed):	DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):				

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	ASS Field Screen								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
~~13~~	~~ID18 CASSG6_7.0~~	19/7/17	~~S~~	~~B~~	1	~~✓~~								
~~14~~ 13	ID18-CASSG6_7.S		S	B	1	✓								
~~15~~ 14	ID18-CASSG6_8.0		S	B	1	✓								
~~16~~ 15	ID18-CASSG6_8.S		S	B	1	✓								
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709500**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 10-Jul-2017 14:45
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 26-Jul-2017 17:37
Sampler	: ----		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 18		
No. of samples analysed	: 18		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1708963, EM1708967, EM1709015, EM1709036, EM17090145 and EM1709171.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46-CASS04_0.5	ID46-CASS04_1	ID46-CASS04_2	ID46-CASS04_4	ID46-CASS04_5.5
				Client sampling date / time	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709500-001	EM1709500-002	EM1709500-003	EM1709500-004	EM1709500-005
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		**8.3**	**9.0**	**9.2**	**5.5**	**6.1**
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	**12**	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		<0.005	<0.005	<0.005	<0.005	**0.039**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		<10	<10	<10	<10	**24**
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		**2.54**	**1.17**	**0.28**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		**507**	**234**	**57**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		**0.81**	**0.37**	**0.09**	----	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	**0.02**	**0.04**
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	**15**	**25**
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	**1**	**2**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	**0.02**	**0.04**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		<10	<10	<10	**15**	**25**
Liming Rate excluding ANC	----	1	kg CaCO3/t		<1	<1	<1	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46-CASS04_8	ID46-CASS04_10	ID46-CASS12_3	ID46-CASS12_6	ID46-CASS12_8.5
			Client sampling date / time	11-Jul-2017 00:00	11-Jul-2017 00:00	12-Jul-2017 00:00	12-Jul-2017 00:00	12-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709500-006	EM1709500-007	EM1709500-008	EM1709500-009	EM1709500-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.6	8.8	6.7	9.5	9.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.050	0.320	<0.005	0.012	0.121
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	31	199	<10	<10	75
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.08	1.38	0.04	1.82	0.31
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	17	276	<10	363	62
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.03	0.44	0.01	0.58	0.10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.03	0.02	<0.02	<0.02	0.05
Net Acidity (acidity units)	----	10	mole H+ / t	20	15	<10	<10	34
Liming Rate	----	1	kg CaCO3/t	2	1	<1	<1	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.32	<0.02	<0.02	0.12
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	31	199	<10	<10	75
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	15	<1	<1	6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46-CASS12_10	ID46-CASS12_12	ID46-CASS12_14.5	ID46-CASS14_3.5	ID46-CASS14_6
			Client sampling date / time	12-Jul-2017 00:00	12-Jul-2017 00:00	12-Jul-2017 00:00	10-Jul-2017 00:00	10-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709500-011	EM1709500-012	EM1709500-013	EM1709500-014	EM1709500-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.8	7.1	8.2	5.4	9.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	8	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.692	0.851	0.430	0.060	0.033
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	432	531	268	37	21
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.34	0.61	0.65	----	1.71
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	268	122	131	<10	341
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.43	0.20	0.21	----	0.55
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.41	0.72	0.29	0.07	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	253	450	181	46	<10
Liming Rate	----	1	kg CaCO3/t	19	34	14	3	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.69	0.85	0.43	0.07	0.03
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	432	531	268	46	21
Liming Rate excluding ANC	----	1	kg CaCO3/t	32	40	20	3	2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46-CASS15_1	ID46-CASS15_2	ID46-CASS16_0.1	----	----
			Client sampling date / time	10-Jul-2017 00:00	10-Jul-2017 00:00	10-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1709500-016	EM1709500-017	EM1709500-018	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**4.0**	**6.4**	**7.1**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**43**	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.07**	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.012**	**0.008**	**0.013**	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	**3.58**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	**716**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	**1.15**	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	**0.08**	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	**51**	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	**4**	<1	<1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.08**	<0.02	<0.02	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**51**	<10	<10	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	**4**	<1	<1	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709500**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 10-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 26-Jul-2017
Sampler	: ----		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 1013062)									
EB1714535-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.7	8.7	0.00	0% - 20%
EB1714952-029	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.07	0.06	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	43	40	6.40	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
EA033-A: Actual Acidity (QC Lot: 1013064)									
EM1709500-010	ID46-CASS12_8.5	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.1	9.1	0.00	0% - 20%
EM1709503-002	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	5	4	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.7	5.8	1.74	0% - 20%
EA033-B: Potential Acidity (QC Lot: 1013062)									
EB1714535-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.261	0.260	0.476	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	163	162	0.00	0% - 50%
EB1714952-029	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	1.45	1.46	0.227	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	906	908	0.227	0% - 20%
EA033-B: Potential Acidity (QC Lot: 1013064)									
EM1709500-010	ID46-CASS12_8.5	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.121	0.117	2.78	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	75	73	2.78	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-B: Potential Acidity (QC Lot: 1013064) - continued									
EM1709503-002	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.005	0.005	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 1013062)									
EB1714535-001	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.51	3.48	0.857	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.12	1.12	0.00	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	702	696	0.857	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 1013064)									
EM1709500-010	ID46-CASS12_8.5	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.31	0.32	0.00	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.10	0.10	0.00	0% - 50%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	62	64	3.17	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 1013062)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.2 pH Unit	100	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	113	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 1013064)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.2 pH Unit	100	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	104	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1013062)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.25483 % S	94.6	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1013064)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.25483 % S	91.7	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 1013062)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	97.8	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 1013064)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	100	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-D: Retained Acidity (QCLot: 1013064)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	96.2	70	130
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.1 % S	100	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709500**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 10-Jul-2017
Site	: Bonbeach LX	Issue Date	: 26-Jul-2017
Sampler	: ----	No. of samples received	: 18
Order number	: 60506004.1.1	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
80* dried soil (EA033) ID46-CASS14_6, ID46-CASS15_1, ID46-CASS15_2, ID46-CASS16_0.1	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS04_0.5, ID46-CASS04_1, ID46-CASS04_2, ID46-CASS04_4, ID46-CASS04_5.5, ID46-CASS04_8, ID46-CASS04_10	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS12_3, ID46-CASS12_6, ID46-CASS12_8.5, ID46-CASS12_10, ID46-CASS12_12, ID46-CASS12_14.5, ID46-CASS14_3.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
EA033-B: Potential Acidity							
80* dried soil (EA033) ID46-CASS14_6, ID46-CASS15_1, ID46-CASS15_2, ID46-CASS16_0.1	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS04_0.5, ID46-CASS04_1, ID46-CASS04_2, ID46-CASS04_4, ID46-CASS04_5.5, ID46-CASS04_8, ID46-CASS04_10	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS12_3, ID46-CASS12_6, ID46-CASS12_8.5, ID46-CASS12_10, ID46-CASS12_12, ID46-CASS12_14.5, ID46-CASS14_3.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity							
80* dried soil (EA033) ID46-CASS14_6, ID46-CASS15_1, ID46-CASS15_2, ID46-CASS16_0.1	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS04_0.5, ID46-CASS04_1, ID46-CASS04_2, ID46-CASS04_4, ID46-CASS04_5.5, ID46-CASS04_8, ID46-CASS04_10	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS12_3, ID46-CASS12_6, ID46-CASS12_8.5, ID46-CASS12_10, ID46-CASS12_12, ID46-CASS12_14.5, ID46-CASS14_3.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
EA033-D: Retained Acidity							
80* dried soil (EA033) ID46-CASS14_6, ID46-CASS15_1, ID46-CASS15_2, ID46-CASS16_0.1	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS04_0.5, ID46-CASS04_1, ID46-CASS04_2, ID46-CASS04_4, ID46-CASS04_5.5, ID46-CASS04_8, ID46-CASS04_10	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS12_3, ID46-CASS12_6, ID46-CASS12_8.5, ID46-CASS12_10, ID46-CASS12_12, ID46-CASS12_14.5, ID46-CASS14_3.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
EA033-E: Acid Base Accounting							
80* dried soil (EA033) ID46-CASS14_6, ID46-CASS15_1, ID46-CASS15_2, ID46-CASS16_0.1	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS04_0.5, ID46-CASS04_1, ID46-CASS04_2, ID46-CASS04_4, ID46-CASS04_5.5, ID46-CASS04_8, ID46-CASS04_10	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID46-CASS12_3, ID46-CASS12_6, ID46-CASS12_8.5, ID46-CASS12_10, ID46-CASS12_12, ID46-CASS12_14.5, ID46-CASS14_3.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709500**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	:		

Dates

Date Samples Received	: 10-Jul-2017 14:45	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 18 / 18

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1708963, EM1708967, EM1709015, EM1709036, EM17090145 and EM1709171.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EM1709500-001	11-Jul-2017 00:00	ID46-CASS04_0.5	✓
EM1709500-002	11-Jul-2017 00:00	ID46-CASS04_1	✓
EM1709500-003	11-Jul-2017 00:00	ID46-CASS04_2	✓
EM1709500-004	11-Jul-2017 00:00	ID46-CASS04_4	✓
EM1709500-005	11-Jul-2017 00:00	ID46-CASS04_5.5	✓
EM1709500-006	11-Jul-2017 00:00	ID46-CASS04_8	✓
EM1709500-007	11-Jul-2017 00:00	ID46-CASS04_10	✓
EM1709500-008	12-Jul-2017 00:00	ID46-CASS12_3	✓
EM1709500-009	12-Jul-2017 00:00	ID46-CASS12_6	✓
EM1709500-010	12-Jul-2017 00:00	ID46-CASS12_8.5	✓
EM1709500-011	12-Jul-2017 00:00	ID46-CASS12_10	✓
EM1709500-012	12-Jul-2017 00:00	ID46-CASS12_12	✓
EM1709500-013	12-Jul-2017 00:00	ID46-CASS12_14.5	✓
EM1709500-014	10-Jul-2017 00:00	ID46-CASS14_3.5	✓
EM1709500-015	10-Jul-2017 00:00	ID46-CASS14_6	✓
EM1709500-016	10-Jul-2017 00:00	ID46-CASS15_1	✓
EM1709500-017	10-Jul-2017 00:00	ID46-CASS15_2	✓
EM1709500-018	10-Jul-2017 00:00	ID46-CASS16_0.1	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

Shirley LeCornu

From: Kaur, Navjot <Navjot.Kaur@aecom.com>
Sent: Wednesday, 19 July 2017 1:42 PM
To: Shirley LeCornu
Cc: Alan Wilson; Sherri Sibio; Liam Spurr
Subject: Further CRS testing - Edithvale and Bonbeach

Hi Shirley

Based on the field results, the following samples have been selected for detailed CRS suite testing:

Can you please log them and start on the analysis, Let me know if you have any questions?

New Lab ID	Bore ID	Sample depth	Sample Date	Lab sample ID	**Further CRS testing**
1	**ID46-CASS04**	0.5	11/7/17	EM1709036-002	x
2	**ID46-CASS04**	1	11/7/17	EM1709036-003	x
3	**ID46-CASS04**	2	11/7/17	EM1709036-005	x
4	**ID46-CASS04**	4	11/7/17	EM1709036-009	x
5	**ID46-CASS04**	5.5	11/7/17	EM1709036-012	x
6	**ID46-CASS04**	8	11/7/17	EM1709036-017	x
7	**ID46-CASS04**	10	11/7/17	EM1709036-021	x
8	**ID46-CASS12**	3	12/7/17	EM1709145-003	x
9	**ID46-CASS12**	6	12/7/17	EM1709145-009	x
10	**ID46-CASS12**	8.5	12/7/17	EM1709145-014	x
11	**ID46-CASS12**	10	12/7/17	EM1709171-002	x
12	**ID46-CASS12**	12	12/7/17	EM1709171-006	x
13	**ID46-CASS12**	14.5	12/7/17	EM1709171-011	x
14	**ID46-CASS14**	3.5	10/7/17	EM1709015-008	x
15	**ID46-CASS14**	6	10/7/17	EM1709015-013	x
16	**ID46-CASS15**	1	10/7/17	EM1708967-003	x
17	**ID46-CASS15**	2	10/7/17	EM1708967-005	x
18	**ID46-CASS16**	0.1	10/7/17	EM1708963-001	x

Environmental Division
Melbourne
Work Order Reference
EM1709500

Telephone : +61-3-8549 9600

1	ID18-CASS11	4	10/7/17	EM1708968-007	x
2	ID18-CASS11	5.5	11/7/17	EM1709034-002	x
3	ID18-CASS11	7	11/7/17	EM1709034-005	x
4	ID18-CASS11	10	11/7/17	EM1709034-011	x
5	ID18-CASS11	11	11/7/17	EM1709034-013	x
6	ID18-CASS11	14	12/7/17	EM1709146-003	x
7	ID18-CASS11	15	12/7/17	EM1709146-005	x
8	ID18-CASS11	19.5	12/7/17	EM1709146-014	x

Batched under EM1709503

Regards
Navjot Kaur
Senior Environmental Scientist
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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709503**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 10-Jul-2017 14:45
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 26-Jul-2017 17:37
Sampler	: ----		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 8		
No. of samples analysed	: 8		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- This is a rebatch of EM1708968, EM1709034 and EM1709146.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS11_4	ID18-CASS11_5.5	ID18-CASS11_7	ID18-CASS11_10	ID18-CASS11_11
				Client sampling date / time	10-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709503-001	EM1709503-002	EM1709503-003	EM1709503-004	EM1709503-005
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		6.6	5.7	5.7	7.4	6.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	5	4	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		0.007	0.005	0.020	1.18	0.065
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		<10	<10	12	737	41
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		0.01	----	----	1.66	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		<10	----	----	332	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		<0.01	----	----	0.53	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	0.02	0.82	0.06
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	16	515	41
Liming Rate	----	1	kg CaCO3/t		<1	<1	1	39	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		<0.02	<0.02	0.02	1.18	0.06
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		<10	<10	16	737	41
Liming Rate excluding ANC	----	1	kg CaCO3/t		<1	<1	1	55	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18-CASS11_14	ID18-CASS11_15	ID18-CASS11_19.5	----	----
			Client sampling date / time	12-Jul-2017 00:00	12-Jul-2017 00:00	12-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1709503-006	EM1709503-007	EM1709503-008	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**6.4**	**6.4**	**6.6**	**----**	**----**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	**----**	**----**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	**----**	**----**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.160**	**0.015**	**0.025**	**----**	**----**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**100**	<10	**15**	**----**	**----**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**----**	**----**	**0.02**	**----**	**----**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**----**	**----**	<10	**----**	**----**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**----**	**----**	<0.01	**----**	**----**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**----**	**----**
Net Acidity (sulfur units)	----	0.02	% S	**0.16**	<0.02	**0.02**	**----**	**----**
Net Acidity (acidity units)	----	10	mole H+ / t	**100**	<10	**13**	**----**	**----**
Liming Rate	----	1	kg CaCO3/t	**7**	<1	<1	**----**	**----**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.16**	<0.02	**0.02**	**----**	**----**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**100**	<10	**15**	**----**	**----**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**7**	<1	**1**	**----**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709503**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 10-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 26-Jul-2017
Sampler	: ----		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 8		
No. of samples analysed	: 8		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 1013064)									
EM1709500-010	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.1	9.1	0.00	0% - 20%
EM1709503-002	ID18-CASS11_5.5	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	5	4	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.7	5.8	1.74	0% - 20%
EA033-B: Potential Acidity (QC Lot: 1013064)									
EM1709500-010	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.121	0.117	2.78	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	75	73	2.78	No Limit
EM1709503-002	ID18-CASS11_5.5	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.005	0.005	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 1013064)									
EM1709500-010	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.31	0.32	0.00	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.10	0.10	0.00	0% - 50%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	62	64	3.17	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 1013064)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.2 pH Unit	100	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	104	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1013064)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.25483 % S	91.7	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 1013064)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	100	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709503**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 10-Jul-2017
Site	: Edithvale LX	Issue Date	: 26-Jul-2017
Sampler	: ----	No. of samples received	: 8
Order number	: 60506004.1.1	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
80* dried soil (EA033) ID18-CASS11_4	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_5.5, ID18-CASS11_7, ID18-CASS11_10, ID18-CASS11_11	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_14, ID18-CASS11_15, ID18-CASS11_19.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
EA033-B: Potential Acidity							
80* dried soil (EA033) ID18-CASS11_4	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_5.5, ID18-CASS11_7, ID18-CASS11_10, ID18-CASS11_11	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_14, ID18-CASS11_15, ID18-CASS11_19.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
EA033-C: Acid Neutralising Capacity							
80* dried soil (EA033) ID18-CASS11_4	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_5.5, ID18-CASS11_7, ID18-CASS11_10, ID18-CASS11_11	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_14, ID18-CASS11_15, ID18-CASS11_19.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
80* dried soil (EA033) ID18-CASS11_4	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_5.5, ID18-CASS11_7, ID18-CASS11_10, ID18-CASS11_11	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_14, ID18-CASS11_15, ID18-CASS11_19.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
EA033-E: Acid Base Accounting							
80* dried soil (EA033) ID18-CASS11_4	**10-Jul-2017**	**25-Jul-2017**	10-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_5.5, ID18-CASS11_7, ID18-CASS11_10, ID18-CASS11_11	**11-Jul-2017**	**25-Jul-2017**	11-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓
80* dried soil (EA033) ID18-CASS11_14, ID18-CASS11_15, ID18-CASS11_19.5	**12-Jul-2017**	**25-Jul-2017**	12-Jul-2018	✓	**25-Jul-2017**	23-Oct-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709503**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX		
Sampler	:		

Dates

Date Samples Received	: 10-Jul-2017 14:45	Issue Date	: 19-Jul-2017
Client Requested Due Date	: 26-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1708968, EM1709034 and EM1709146.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EM1709503-001	10-Jul-2017 00:00	ID18-CASS11_4	✓
EM1709503-002	11-Jul-2017 00:00	ID18-CASS11_5.5	✓
EM1709503-003	11-Jul-2017 00:00	ID18-CASS11_7	✓
EM1709503-004	11-Jul-2017 00:00	ID18-CASS11_10	✓
EM1709503-005	11-Jul-2017 00:00	ID18-CASS11_11	✓
EM1709503-006	12-Jul-2017 00:00	ID18-CASS11_14	✓
EM1709503-007	12-Jul-2017 00:00	ID18-CASS11_15	✓
EM1709503-008	12-Jul-2017 00:00	ID18-CASS11_19.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

Shirley LeCornu

From: Kaur, Navjot <Navjot.Kaur@aecom.com>
Sent: Wednesday, 19 July 2017 1:42 PM
To: Shirley LeCornu
Cc: Alan Wilson; Sherri Sibio; Liam Spurr
Subject: Further CRS testing - Edithvale and Bonbeach

Hi Shirley

Based on the field results, the following samples have been selected for detailed CRS suite testing:

Can you please log them and start on the analysis, Let me know if you have any questions?

Bore ID	Sample depth	Sample Date	Lab sample ID	**Further CRS testing**
ID46-CASS04	0.5	11/7/17	EM1709036-002	x
ID46-CASS04	1	11/7/17	EM1709036-003	x
ID46-CASS04	2	11/7/17	EM1709036-005	x
ID46-CASS04	4	11/7/17	EM1709036-009	x
ID46-CASS04	5.5	11/7/17	EM1709036-012	x
ID46-CASS04	8	11/7/17	EM1709036-017	x
ID46-CASS04	10	11/7/17	EM1709036-021	x
ID46-CASS12	3	12/7/17	EM1709145-003	x
ID46-CASS12	6	12/7/17	EM1709145-009	x
ID46-CASS12	8.5	12/7/17	EM1709145-014	x
ID46-CASS12	10	12/7/17	EM1709171-002	x
ID46-CASS12	12	12/7/17	EM1709171-006	x
ID46-CASS12	14.5	12/7/17	EM1709171-011	x
ID46-CASS14	3.5	10/7/17	EM1709015-008	x
ID46-CASS14	6	10/7/17	EM1709015-013	x
ID46-CASS15	1	10/7/17	EM1708967-003	x
ID46-CASS15	2	10/7/17	EM1708967-005	x
ID46-CASS16	0.1	10/7/17	EM1708963-001	x

Batched under EM1709500.

Environmental Division
Melbourne
Work Order Reference
EM1709503

Telephone : +61-3-8549 9600

New Lab ID

1	ID18-CASS11	4	10/7/17	EM1708968-007	x
2	ID18-CASS11	5.5	11/7/17	EM1709034-002	x
3	ID18-CASS11	7	11/7/17	EM1709034-005	x
4	ID18-CASS11	10	11/7/17	EM1709034-011	x
5	ID18-CASS11	11	11/7/17	EM1709034-013	x
6	ID18-CASS11	14	12/7/17	EM1709146-003	x
7	ID18-CASS11	15	12/7/17	EM1709146-005	x
8	ID18-CASS11	19.5	12/7/17	EM1709146-014	x

Regards
Navjot Kaur
Senior Environmental Scientist
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Navjot.Kaur@aecom.com

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709564**	Page	: 1 of 28
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 20-Jul-2017 15:45
Order number	: 60506004.1.1	Date Analysis Commenced	: 21-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017 17:10
Sampler	: ADW		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 44		
No. of samples analysed	: 44		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_0.5	ID18CASS16_1.0	ID18CASS16_1.5
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709564-001	EM1709564-002	EM1709564-003	EM1709564-004	EM1709564-005
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.2	6.1	----	6.5	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.6	----	6.7	6.5	6.4
pH (Fox)	----	0.1	pH Unit	3.8	----	4.9	4.4	4.6
Reaction Rate	----	1	-	2	----	1	2	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	4.0	3.8	----	2.4	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Copper	7440-50-8	5	mg/kg	59	54	----	<5	----
Lead	7439-92-1	5	mg/kg	110	98	----	<5	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	<2	----
Nickel	7440-02-0	2	mg/kg	8	35	----	<2	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	<5	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	<2	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	<5	----
Zinc	7440-66-6	5	mg/kg	44	46	----	<5	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	40	70	----	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_0.5	ID18CASS16_1.0	ID18CASS16_1.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-001	EM1709564-002	EM1709564-003	EM1709564-004	EM1709564-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_0.5	ID18CASS16_1.0	ID18CASS16_1.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-001	EM1709564-002	EM1709564-003	EM1709564-004	EM1709564-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	----	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	----	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	----	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	----	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	----	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	4.0	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	2.1	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		0.8	5.6	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		0.8	5.2	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		0.5	2.4	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	1.8	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		1.0	3.1	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		0.5	1.9	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	0.8	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	1.1	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_0.5	ID18CASS16_1.0	ID18CASS16_1.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-001	EM1709564-002	EM1709564-003	EM1709564-004	EM1709564-005
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**3.6**	**28.0**	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		**0.6**	**2.6**	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.9**	**2.8**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**3.0**	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_0.5	ID18CASS16_1.0	ID18CASS16_1.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-001	EM1709564-002	EM1709564-003	EM1709564-004	EM1709564-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		**140**	**120**	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		**170**	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**310**	**120**	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		**250**	**180**	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**250**	**180**	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**97.4**	**86.9**	----	**99.8**	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**114**	**101**	----	**110**	----
Toluene-D8	2037-26-5	0.1	%		**99.0**	**86.3**	----	**94.5**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**101**	----	**108**	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		**94.8**	**100**	----	**103**	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**91.3**	**96.9**	----	**93.6**	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**96.5**	**99.0**	----	**91.1**	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		**91.2**	**91.2**	----	**89.8**	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**88.7**	**88.3**	----	**85.2**	----
2-Fluorobiphenyl	321-60-8	0.025	%		**95.2**	**97.4**	----	**93.2**	----
Anthracene-d10	1719-06-8	0.025	%		**111**	**113**	----	**110**	----
4-Terphenyl-d14	1718-51-0	0.025	%		**110**	**112**	----	**110**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_2.0	ID18CASS16_2.5	ID18CASS16_3.0	ID18CASS16_3.5	ID18CASS16_4.0
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-006	EM1709564-007	EM1709564-008	EM1709564-009	EM1709564-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**6.2**	**9.1**	**7.6**	**8.9**	**6.7**
pH (Fox)	----	0.1	pH Unit		**4.8**	**6.1**	**4.1**	**4.9**	**5.2**
Reaction Rate	----	1	-		**2**	**2**	**2**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS16_4.5	ID18CASS16_5.0	ID18CASS15_0.1	ID18CASS15_0.3	ID18CASS15_0.5
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709564-011	EM1709564-012	EM1709564-013	EM1709564-014	EM1709564-015
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	----	5.2	5.4	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.1	6.6	6.0	----	6.4
pH (Fox)	----	0.1	pH Unit	4.9	4.3	3.4	----	6.1
Reaction Rate	----	1	-	1	2	3	----	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	4.1	1.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	<5	<5	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	<1	----
Copper	7440-50-8	5	mg/kg	----	----	84	16	----
Lead	7439-92-1	5	mg/kg	----	----	118	7	----
Molybdenum	7439-98-7	2	mg/kg	----	----	<2	<2	----
Nickel	7440-02-0	2	mg/kg	----	----	8	<2	----
Selenium	7782-49-2	5	mg/kg	----	----	<5	<5	----
Silver	7440-22-4	2	mg/kg	----	----	<2	<2	----
Tin	7440-31-5	5	mg/kg	----	----	<5	<5	----
Zinc	7440-66-6	5	mg/kg	----	----	49	6	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	<40	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_4.5	ID18CASS16_5.0	ID18CASS15_0.1	ID18CASS15_0.3	ID18CASS15_0.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-011	EM1709564-012	EM1709564-013	EM1709564-014	EM1709564-015
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	----	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	<0.5	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	----	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		----	----	<0.02	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		----	----	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		----	----	<0.4	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		----	----	<0.02	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		----	----	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		----	----	<0.02	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		----	----	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		----	----	<0.01	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		----	----	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		----	----	<0.02	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		----	----	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		----	----	<0.02	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		----	----	<0.01	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		----	----	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		----	----	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		----	----	<0.02	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		----	----	<0.02	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		----	----	<0.02	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		----	----	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		----	----	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		----	----	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	----	<0.03	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	----	<0.03	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	----	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	----	<0.03	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	<0.05	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_4.5	ID18CASS16_5.0	ID18CASS15_0.1	ID18CASS15_0.3	ID18CASS15_0.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-011	EM1709564-012	EM1709564-013	EM1709564-014	EM1709564-015
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	<0.05	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	<0.03	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg		----	----	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		----	----	<1	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		----	----	<1	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		----	----	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		----	----	<5	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		----	----	<5	<5	----
Dinoseb	88-85-7	5	mg/kg		----	----	<5	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		----	----	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		----	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	----	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_4.5	ID18CASS16_5.0	ID18CASS15_0.1	ID18CASS15_0.3	ID18CASS15_0.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-011	EM1709564-012	EM1709564-013	EM1709564-014	EM1709564-015
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	**1.2**	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		----	----	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		----	----	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		----	----	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		----	----	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		----	----	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		----	----	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		----	----	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		----	----	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		----	----	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		----	----	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		----	----	<0.03	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		----	----	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		----	----	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		----	----	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		----	----	<0.03	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		----	----	<0.03	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		----	----	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		----	----	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		----	----	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		----	----	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		----	----	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		----	----	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	<10	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS16_4.5	ID18CASS16_5.0	ID18CASS15_0.1	ID18CASS15_0.3	ID18CASS15_0.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-011	EM1709564-012	EM1709564-013	EM1709564-014	EM1709564-015
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		----	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		----	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		----	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	120	<100	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	120	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	83.4	68.1	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	115	101	----
Toluene-D8	2037-26-5	0.1	%		----	----	98.2	85.2	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	113	92.9	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		----	----	95.4	98.6	----
2-Chlorophenol-D4	93951-73-6	0.025	%		----	----	96.0	88.4	----
2.4.6-Tribromophenol	118-79-6	0.025	%		----	----	93.6	90.6	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		----	----	89.0	87.1	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	----	85.8	81.7	----
2-Fluorobiphenyl	321-60-8	0.025	%		----	----	92.0	92.3	----
Anthracene-d10	1719-06-8	0.025	%		----	----	105	106	----
4-Terphenyl-d14	1718-51-0	0.025	%		----	----	102	103	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS15_0.9	ID18CASS15_1.0	ID18CASS15_1.5	ID18CASS15_2.0	ID18CASS15_2.5
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709564-016	EM1709564-017	EM1709564-018	EM1709564-019	EM1709564-020
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.4	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	5.2	5.3	6.4	6.0
pH (Fox)	----	0.1	pH Unit	----	4.5	4.1	5.5	4.3
Reaction Rate	----	1	-	----	1	1	2	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	2.5	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	<40	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS15_0.9	ID18CASS15_1.0	ID18CASS15_1.5	ID18CASS15_2.0	ID18CASS15_2.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-016	EM1709564-017	EM1709564-018	EM1709564-019	EM1709564-020
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS15_0.9	ID18CASS15_1.0	ID18CASS15_1.5	ID18CASS15_2.0	ID18CASS15_2.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-016	EM1709564-017	EM1709564-018	EM1709564-019	EM1709564-020
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS15_0.9	ID18CASS15_1.0	ID18CASS15_1.5	ID18CASS15_2.0	ID18CASS15_2.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-016	EM1709564-017	EM1709564-018	EM1709564-019	EM1709564-020
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS15_0.9	ID18CASS15_1.0	ID18CASS15_1.5	ID18CASS15_2.0	ID18CASS15_2.5
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-016	EM1709564-017	EM1709564-018	EM1709564-019	EM1709564-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**76.0**	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**97.6**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**86.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**89.8**	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		**96.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**87.9**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**87.2**	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		**86.6**	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**80.4**	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		**88.7**	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		**103**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		**101**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS15_3.0	ID18CASS15_3.5	ID18CASS15_4.0	ID18CASS15_4.5	ID18CASS15_5.0
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-021	EM1709564-022	EM1709564-023	EM1709564-024	EM1709564-025
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**7.3**	**8.2**	**7.1**	**6.3**	**5.1**
pH (Fox)	----	0.1	pH Unit		**4.9**	**5.0**	**4.7**	**4.7**	**6.3**
Reaction Rate	----	1	-		**1**	**1**	**2**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.0	ID18CASS14_1.5	ID18CASS14_2.0
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709564-026	EM1709564-027	EM1709564-028	EM1709564-029	EM1709564-030
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.5	4.5	----	4.2	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.1	4.8	4.6	4.7	7.6
pH (Fox)	----	0.1	pH Unit	3.0	4.3	3.5	3.5	4.1
Reaction Rate	----	1	-	2	2	1	1	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	5.0	2.1	----	2.0	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Copper	7440-50-8	5	mg/kg	59	<5	----	<5	----
Lead	7439-92-1	5	mg/kg	116	<5	----	<5	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	<2	----
Nickel	7440-02-0	2	mg/kg	9	<2	----	<2	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	<5	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	<2	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	<5	----
Zinc	7440-66-6	5	mg/kg	57	<5	----	<5	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	<40	<40	----	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.0	ID18CASS14_1.5	ID18CASS14_2.0
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-026	EM1709564-027	EM1709564-028	EM1709564-029	EM1709564-030
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.0	ID18CASS14_1.5	ID18CASS14_2.0
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-026	EM1709564-027	EM1709564-028	EM1709564-029	EM1709564-030
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	----	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	----	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	----	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	----	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	----	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.0	ID18CASS14_1.5	ID18CASS14_2.0
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-026	EM1709564-027	EM1709564-028	EM1709564-029	EM1709564-030
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.0	ID18CASS14_1.5	ID18CASS14_2.0
				Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709564-026	EM1709564-027	EM1709564-028	EM1709564-029	EM1709564-030
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		100	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		100	<50	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		160	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		160	<50	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		89.9	89.4	----	73.3	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		106	105	----	98.7	----
Toluene-D8	2037-26-5	0.1	%		90.6	86.3	----	88.0	----
4-Bromofluorobenzene	460-00-4	0.1	%		99.8	96.1	----	97.2	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		96.8	90.3	----	92.0	----
2-Chlorophenol-D4	93951-73-6	0.025	%		94.8	88.4	----	88.5	----
2.4.6-Tribromophenol	118-79-6	0.025	%		95.8	90.2	----	102	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		85.8	82.5	----	88.4	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		82.3	78.2	----	89.6	----
2-Fluorobiphenyl	321-60-8	0.025	%		90.9	89.8	----	100	----
Anthracene-d10	1719-06-8	0.025	%		107	104	----	94.4	----
4-Terphenyl-d14	1718-51-0	0.025	%		107	102	----	90.9	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS14_2.5	ID18CASS14_3.0	ID18CASS14_3.5	ID18CASS14_4.0	ID18CASS14_4.5
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709564-031	EM1709564-032	EM1709564-033	EM1709564-034	EM1709564-035
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**7.5**	**5.6**	**6.2**	**4.4**	**5.0**
pH (Fox)	----	0.1	pH Unit	**4.8**	**5.3**	**3.7**	**3.9**	**4.1**
Reaction Rate	----	1	-	**2**	**2**	**1**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS14_5.0	ID18CASS14_5.5	ID18CASS14_6.0	ID18CASS14_6.5	ID18CASS14_7.0
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709564-036	EM1709564-037	EM1709564-038	EM1709564-039	EM1709564-040
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**4.4**	**4.3**	**5.8**	**6.8**	**5.8**
pH (Fox)	----	0.1	pH Unit	**3.8**	**2.8**	**2.4**	**4.2**	**2.7**
Reaction Rate	----	1	-	**1**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC1_200717	DUP1_200717	ID46CASS07_15.5	ID46CASS07_16.0	----
			Client sampling date / time	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	20-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit	EM1709564-041	EM1709564-042	EM1709564-043	EM1709564-044	--------
				Result	Result	Result	Result	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.5**	**5.9**	**9.5**	**9.5**	**----**
pH (Fox)	----	0.1	pH Unit	**4.5**	**4.2**	**6.5**	**8.6**	**----**
Reaction Rate	----	1	-	**2**	**2**	**4**	**4**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709564**	Page	: 1 of 14
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 20-Jul-2017 15:45
Order number	: 60506004.1.1	Date Analysed	: 21-Jul-2017
C-O-C number	: ----	Date Issued	: 25-Jul-2017 17:09
No. of samples received	: 44		
No. of samples analysed	: 44	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	*ALS Sample ID*	*Compound*	*Method*	*LOR*	*Limits*	*Result*
ID18CASS16_0.3	**EM1709564-002**	Benzo(a)pyrene	EP075-EM	0.5	*< 1 mg/kg*	**1.9 mg/kg**
ID18CASS16_0.3	**EM1709564-002**	Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	*< 20 mg/kg*	**28.0 mg/kg**

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18CASS16_0.1 / Sampling date/time: 20-Jul-2017 / EM1709564-001	ID18CASS16_0.3 / 20-Jul-2017 / EM1709564-002	ID18CASS16_1.0 / 20-Jul-2017 / EM1709564-004	ID18CASS15_0.1 / 20-Jul-2017 / EM1709564-013	ID18CASS15_0.3 / 20-Jul-2017 / EM1709564-014
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**5.2**	**6.1**	**6.5**	**5.2**	**5.4**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	<5	<5	<5
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	20000	**59**	**54**	<5	**84**	**16**
Lead	EG005T	5	mg/kg	----	6000	**110**	**98**	<5	**118**	**7**
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	12000	**8**	**35**	<2	**8**	<2
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	<2	<2
Zinc	EG005T	5	mg/kg	----	140000	**44**	**46**	<5	**49**	**6**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	**40**	**70**	<40	<40	<40
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	**0.5**	**1.9**	<0.5	<0.5	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_1.0	ID18CASS15_0.1	ID18CASS15_0.3
				Sampling date/time			20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017
Compound	*Method*	*LOR*	*Unit*				EM1709564-001	EM1709564-002	EM1709564-004	EM1709564-013	EM1709564-014
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	400	**3.6**	**28.0**	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	16	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	50	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	2600	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	40000	**310**	**120**	<50	<50	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18CASS16_0.1 / Sampling date/time: 20-Jul-2017 / EM1709564-001	ID18CASS16_0.3 / 20-Jul-2017 / EM1709564-002	ID18CASS16_1.0 / 20-Jul-2017 / EM1709564-004	ID18CASS15_0.1 / 20-Jul-2017 / EM1709564-013	ID18CASS15_0.3 / 20-Jul-2017 / EM1709564-014
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.2**	**6.1**	**6.5**	**5.2**	**5.4**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	<5
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	5000	**59**	**54**	<5	**84**	**16**
Lead	EG005T	5	mg/kg	----	1500	**110**	**98**	<5	**118**	**7**
Molybdenum	EG005T	2	mg/kg	----	1000	<2	<2	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	3000	**8**	**35**	<2	**8**	<2
Selenium	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	180	<2	<2	<2	<2	<2
Tin	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	<5
Zinc	EG005T	5	mg/kg	----	35000	**44**	**46**	<5	**49**	**6**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	10000	**40**	**70**	<40	<40	<40
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	**0.5**	**1.9**	<0.5	<0.5	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_1.0	ID18CASS15_0.1	ID18CASS15_0.3
				Sampling date/time			20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017
Compound	*Method*	*LOR*	*Unit*				EM1709564-001	EM1709564-002	EM1709564-004	EM1709564-013	EM1709564-014
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	100	**3.6**	**28.0**	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	4	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	650	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	10000	**310**	**120**	<50	<50	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	ID18CASS16_0.1	ID18CASS16_0.3	ID18CASS16_1.0	ID18CASS15_0.1	ID18CASS15_0.3
Client sample ID										
Sampling date/time						20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017
						EM1709564-001	EM1709564-002	EM1709564-004	EM1709564-013	EM1709564-014
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.2**	**6.1**	**6.5**	**5.2**	**5.4**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	<5	<5	<5
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	100	**59**	**54**	<5	**84**	**16**
Lead	EG005T	5	mg/kg	----	300	**110**	**98**	<5	**118**	**7**
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	60	**8**	**35**	<2	**8**	<2
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	<2	<2
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5
Zinc	EG005T	5	mg/kg	----	200	**44**	**46**	<5	**49**	**6**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	**40**	**70**	<40	<40	<40
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	**0.5**	**1.9**	<0.5	<0.5	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS16_0.1 20-Jul-2017	**ID18CASS16_0.3** 20-Jul-2017	**ID18CASS16_1.0** 20-Jul-2017	**ID18CASS15_0.1** 20-Jul-2017	**ID18CASS15_0.3** 20-Jul-2017
						EM1709564-001	**EM1709564-002**	**EM1709564-004**	**EM1709564-013**	**EM1709564-014**
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	**3.6**	**28.0**	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	**310**	**120**	<50	<50	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS15_0.9 20-Jul-2017	**ID18CASS14_0.1** 20-Jul-2017	**ID18CASS14_0.5** 20-Jul-2017	**ID18CASS14_1.5** 20-Jul-2017	---- ----
						EM1709564-016	**EM1709564-026**	**EM1709564-027**	**EM1709564-029**	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**5.4**	**5.5**	**4.5**	**4.2**	**----**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	<5	<5	**----**
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	<1	**----**
Copper	EG005T	5	mg/kg	----	20000	<5	**59**	<5	<5	**----**
Lead	EG005T	5	mg/kg	----	6000	<5	**116**	<5	<5	**----**
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	<2	**----**
Nickel	EG005T	2	mg/kg	----	12000	<2	**9**	<2	<2	**----**
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	<5	**----**
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	<2	**----**
Zinc	EG005T	5	mg/kg	----	140000	<5	**57**	<5	<5	**----**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	<0.1	**----**
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	<0.5	**----**
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	**----**
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	<40	<40	<40	<40	**----**
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	**----**
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	**----**
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	**----**
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	**----**
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	**----**
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	<0.03	**----**
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	**----**
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	<0.5	**----**
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	<0.5	<0.5	<0.5	<0.5	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID18CASS15_0.9**	**ID18CASS14_0.1**	**ID18CASS14_0.5**	**ID18CASS14_1.5**	**----**
						Sampling date/time 20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	----
						EM1709564-016	**EM1709564-026**	**EM1709564-027**	**EM1709564-029**	--------
EP075I: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	**----**
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	**----**
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	**----**
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	<0.03	<0.03	**----**
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	<0.03	<0.03	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	<10	<10	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	**100**	<50	<50	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS15_0.9 20-Jul-2017	**ID18CASS14_0.1** 20-Jul-2017	**ID18CASS14_0.5** 20-Jul-2017	**ID18CASS14_1.5** 20-Jul-2017	**----** ----
						EM1709564-016	**EM1709564-026**	**EM1709564-027**	**EM1709564-029**	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.4**	**5.5**	**4.5**	**4.2**	**----**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	**----**
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	<1	<1	**----**
Copper	EG005T	5	mg/kg	----	5000	<5	**59**	<5	<5	**----**
Lead	EG005T	5	mg/kg	----	1500	<5	**116**	<5	<5	**----**
Molybdenum	EG005T	2	mg/kg	----	1000	<2	<2	<2	<2	**----**
Nickel	EG005T	2	mg/kg	----	3000	<2	**9**	<2	<2	**----**
Selenium	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	**----**
Silver	EG005T	2	mg/kg	----	180	<2	<2	<2	<2	**----**
Tin	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	**----**
Zinc	EG005T	5	mg/kg	----	35000	<5	**57**	<5	<5	**----**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	<0.1	**----**
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	<0.5	**----**
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	**----**
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	10000	<40	<40	<40	<40	**----**
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	**----**
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	**----**
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	**----**
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	**----**
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	**----**
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	**----**
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	**----**
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	<0.5	<0.5	<0.5	<0.5	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS15_0.9	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.5	----
				Sampling date/time			20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	----
Compound	*Method*	*LOR*	*Unit*				EM1709564-016	EM1709564-026	EM1709564-027	EM1709564-029	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	<0.5	<0.5	<0.5	<0.5	**----**
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	**----**
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	**----**
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	**----**
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.03	<0.03	<0.03	**----**
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	**----**
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	<10	<10	<10	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	<50	**100**	<50	<50	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

				Client sample ID		ID18CASS15_0.9	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.5	----
				Sampling date/time		20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	----
Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	EM1709564-016	EM1709564-026	EM1709564-027	EM1709564-029	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.4**	**5.5**	**4.5**	**4.2**	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	<5	<5	----
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	<1	----
Copper	EG005T	5	mg/kg	----	100	<5	**59**	<5	<5	----
Lead	EG005T	5	mg/kg	----	300	<5	**116**	<5	<5	----
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	<2	----
Nickel	EG005T	2	mg/kg	----	60	<2	**9**	<2	<2	----
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	<5	----
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	<2	----
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	----
Zinc	EG005T	5	mg/kg	----	200	<5	**57**	<5	<5	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	<40	<40	<40	<40	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS15_0.9	ID18CASS14_0.1	ID18CASS14_0.5	ID18CASS14_1.5	----
				Sampling date/time			20-Jul-2017	20-Jul-2017	20-Jul-2017	20-Jul-2017	----
Compound	*Method*	*LOR*	*Unit*				EM1709564-016	EM1709564-026	EM1709564-027	EM1709564-029	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	<0.5	**----**
EP075I: Organochlorine Pesticides											
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	**----**
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	<10	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	**100**	<50	<50	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709564**	Page	: 1 of 17
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 20-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 21-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017
Sampler	: ADW		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 44		
No. of samples analysed	: 44		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1010055)									
EM1709480-026	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EM1709564-001	ID18CASS16_0.1	EA001: pH (CaCl2)	----	0.1	pH Unit	5.2	5.3	1.90	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1010026)									
EM1709547-055	Anonymous	EA055: Moisture Content	----	1	%	7.2	7.8	9.24	No Limit
EM1709564-014	ID18CASS15_0.3	EA055: Moisture Content	----	1	%	1.6	1.8	16.3	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1009574)									
EM1709564-001	ID18CASS16_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	11	34.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	59	62	3.80	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	110	113	1.87	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	49	10.6	No Limit
EM1709577-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	33	35	5.66	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	58	36	46.8	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	20	21	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	72	67	6.90	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1009574) - continued									
EM1709577-002	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	5	6	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	86	76	12.3	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1009573)									
EM1709564-001	ID18CASS16_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709577-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.4	31.2	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1009586)									
EM1709547-013	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709564-027	ID18CASS14_0.5	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1009982)									
EM1709480-018	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1709564-004	ID18CASS16_1.0	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1009589)									
EM1709555-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	180	12.4	No Limit
EM1709564-029	ID18CASS14_1.5	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	<40	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1009545)									
EM1709564-001	ID18CASS16_0.1	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709590-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1009549)									
EM1709533-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1009537)									
EM1709564-001	ID18CASS16_0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1009537)									
EM1709564-001	ID18CASS16_0.1	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1009537)									
EM1709564-001	ID18CASS16_0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1009537) - continued									
EM1709564-001	ID18CASS16_0.1	EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1009543)									
EM1709564-001	ID18CASS16_0.1	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1709590-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1009547)									
EM1709533-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1009547) - continued									
EM1709533-002	Anonymous	EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1009543)									
EM1709564-001	ID18CASS16_0.1	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1709590-004	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1009547)									
EM1709533-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1009543)									
EM1709564-001	ID18CASS16_0.1	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1009543) - continued									
EM1709564-001	ID18CASS16_0.1	EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	0.8	1.2	34.8	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	0.8	1.1	33.8	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	0.5	0.7	23.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	0.6	21.6	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	1.0	1.3	20.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.5	0.6	21.9	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709590-004	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1009547)									
EM1709533-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1009547) - continued									
EM1709533-002	Anonymous	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1009543)									
EM1709564-001	ID18CASS16_0.1	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1709590-004	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1009543) - continued									
EM1709590-004	Anonymous	EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1009547)									
EM1709533-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1009537)									
EM1709564-001	ID18CASS16_0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1009544)									
EM1709564-001	ID18CASS16_0.1	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	140	130	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	170	160	6.37	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709590-004	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1009548)									
EM1709533-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1009548) - continued									
EM1709533-002	Anonymous	EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1009537)									
EM1709564-001	ID18CASS16_0.1	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1009544)									
EM1709564-001	ID18CASS16_0.1	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	250	230	6.72	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709590-004	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1009548)									
EM1709533-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1009574)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	101	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	92.0	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.7	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	109	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.5	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	84.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	99.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1009573)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1009586)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	85.0	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1009982)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	87.1	80	110
EK040T: Fluoride Total (QCLot: 1009589)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	101	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1009545)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	94.9	63	133
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1009549)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	80.7	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1009537)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.5	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.9	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	84.1	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	81.9	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	89.6	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	83.4	70	116
EP074H: Naphthalene (QCLot: 1009537)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	85.1	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1009537)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1009537) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	114	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	89.5	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	100	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	93.4	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	91.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.7	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	87.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	87.0	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	104	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	88.4	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	93.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	80.5	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	90.8	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	91.2	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	75.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.5	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	80.4	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	86.0	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	71.8	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1009543)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	104	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	109	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	111	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	111	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	107	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	106	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	99.6	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	95.9	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	109	36	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1009547)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	119	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	114	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	118	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	112	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	117	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	115	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	109	46	126

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1009547) - continued								
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	122	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	118	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1009543)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	113	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	131	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	107	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	107	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	111	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	80.1	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	112	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	104	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	82.6	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	90.4	12	132
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1009547)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	115	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	113	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	112	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	111	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	113	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	54.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	112	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	88.1	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	74.3	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	87.2	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1009543)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	117	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	116	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	115	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	115	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	121	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	124	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	122	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	119	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	123	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	125	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	116	55	133

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1009543) - continued								
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	114	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	102	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	108	55	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1009547)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	117	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	119	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	116	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	122	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	112	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	115	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	116	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	130	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	130	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	131	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	122	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	117	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	114	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	114	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	114	55	137
EP075I: Organochlorine Pesticides (QCLot: 1009543)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	117	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	110	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	114	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	118	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	122	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	119	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	124	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	120	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	120	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	118	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	119	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	114	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	123	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	157	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	124	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	118	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	123	57	135

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 1009543) - continued								
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	# 134	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	111	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	120	48	136
EP075I: Organochlorine Pesticides (QCLot: 1009547)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	124	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	120	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	120	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	122	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	115	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	118	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	116	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	123	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	127	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	127	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	125	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	120	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	128	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	84.1	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	140	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	128	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	130	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	131	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	123	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	126	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009537)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	78.6	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009544)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	97.4	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	94.2	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	94.0	75	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009548)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	98.2	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	95.0	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	91.0	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1009537)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	76.5	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1009544)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	95.8	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	95.4	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	95.0	43	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1009548)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	95.0	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	94.8	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	92.4	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1009574)							
EM1709564-002	ID18CASS16_0.3	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.8	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	98.9	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	101	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	90.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	98.9	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	86.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	90.9	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1009573)							
EM1709564-002	ID18CASS16_0.3	EG035T: Mercury	7439-97-6	5 mg/kg	83.5	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1009586)							
EM1709547-051	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	76.1	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1009982)							
EM1709480-022	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	89.2	77	113
EK040T: Fluoride Total (QCLot: 1009589)							
EM1709564-001	ID18CASS16_0.1	EK040T: Fluoride	16984-48-8	400 mg/kg	110	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1009545)							
EM1709564-013	ID18CASS15_0.1	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	77.8	36	152
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1009549)							
EM1709588-015	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	92.2	36	152

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1009537)							
EM1709564-002	ID18CASS16_0.3	EP074-UT: Benzene	71-43-2	2 mg/kg	123	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	112	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1009537)							
EM1709564-002	ID18CASS16_0.3	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	136	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	119	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	119	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1009543)							
EM1709564-002	ID18CASS16_0.3	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	85.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	69.8	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	70.7	10	144
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1009547)							
EM1709564-029	ID18CASS14_1.5	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	79.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	68.1	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	44.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1009543)							
EM1709564-002	ID18CASS16_0.3	EP075-EM: Phenol	108-95-2	1 mg/kg	80.0	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	63.5	13	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1009547)							
EM1709564-029	ID18CASS14_1.5	EP075-EM: Phenol	108-95-2	1 mg/kg	68.5	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	62.2	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1009543)							
EM1709564-002	ID18CASS16_0.3	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	101	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	# Not Determined	27	169
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1009547)							
EM1709564-029	ID18CASS14_1.5	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	95.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	91.0	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009537)							
EM1709564-002	ID18CASS16_0.3	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	82.1	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009544)							
EM1709564-004	ID18CASS16_1.0	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	96.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	96.6	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009548)							
EM1709588-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	95.7	70	124

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1009548) - continued							
EM1709588-001	Anonymous	EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	91.4	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1009537)							
EM1709564-002	ID18CASS16_0.3	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	78.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1009544)							
EM1709564-004	ID18CASS16_1.0	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	98.1	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	98.1	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	98.6	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1009548)							
EM1709588-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	96.6	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	95.4	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	89.7	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709564**	Page	: 1 of 10
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 20-Jul-2017
Site	: Edithvale LX	Issue Date	: 25-Jul-2017
Sampler	: ADW	No. of samples received	: 44
Order number	: 60506004.1.1	No. of samples analysed	: 44

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075I: Organochlorine Pesticides	QC-1009543-001	----	**Endosulfan sulfate**	1031-07-8	134 %	51-133%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1709564--002	ID18CASS16_0.3	**Pyrene**	129-00-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**24-Jul-2017**	27-Jul-2017	✓	**24-Jul-2017**	24-Jul-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)			Sample Date	Extraction / Preparation			Analysis		
				Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis									
Snap Lock Bag - frozen on receipt at ALS (EA037)									
ID18CASS16_0.1,	ID18CASS16_0.5,		**20-Jul-2017**	**24-Jul-2017**	16-Jan-2018	✓	**24-Jul-2017**	16-Jan-2018	✓
ID18CASS16_1.0,	ID18CASS16_1.5,								
ID18CASS16_2.0,	ID18CASS16_2.5,								
ID18CASS16_3.0,	ID18CASS16_3.5,								
ID18CASS16_4.0,	ID18CASS16_4.5,								
ID18CASS16_5.0,	ID18CASS15_0.1,								
ID18CASS15_0.5,	ID18CASS15_1.0,								
ID18CASS15_1.5,	QC1_200717,								
ID18CASS15_2.0,									
ID18CASS15_2.5,	ID18CASS15_3.0,								
ID18CASS15_3.5,	ID18CASS15_4.0,								
ID18CASS15_4.5,	ID18CASS15_5.0,								
ID18CASS14_0.1,	ID18CASS14_0.5,								
ID18CASS14_1.0,	ID18CASS14_1.5,								
ID18CASS14_2.0,	ID18CASS14_2.5,								
ID18CASS14_3.0,	ID18CASS14_3.5,								
DUP1_200717,	ID18CASS14_4.0,	ID18CASS14_4.5,							
ID18CASS14_5.0,	ID18CASS14_5.5,								
ID18CASS14_6.0,	ID18CASS14_6.5,								
ID18CASS14_7.0,	ID46CASS07_15.5,								
ID46CASS07_16.0									
EA055: Moisture Content (Dried @ 105-110°C)									
Soil Glass Jar - Unpreserved (EA055)									
ID18CASS16_0.1,	ID18CASS16_0.3,		**20-Jul-2017**	**----**	----	----	**21-Jul-2017**	03-Aug-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,								
ID18CASS15_0.3,	ID18CASS15_0.9,								
ID18CASS14_0.1,	ID18CASS14_0.5,								
ID18CASS14_1.5									
EG005T: Total Metals by ICP-AES									
Soil Glass Jar - Unpreserved (EG005T)									
ID18CASS16_0.1,	ID18CASS16_0.3,		**20-Jul-2017**	**24-Jul-2017**	16-Jan-2018	✓	**25-Jul-2017**	16-Jan-2018	✓
ID18CASS16_1.0,	ID18CASS15_0.1,								
ID18CASS15_0.3,	ID18CASS15_0.9,								
ID18CASS14_0.1,	ID18CASS14_0.5,								
ID18CASS14_1.5									

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**24-Jul-2017**	17-Aug-2017	✓	**25-Jul-2017**	17-Aug-2017	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	17-Aug-2017	✓	**21-Jul-2017**	28-Jul-2017	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	03-Aug-2017	✓	**24-Jul-2017**	04-Aug-2017	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	17-Aug-2017	✓	**25-Jul-2017**	17-Aug-2017	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	03-Aug-2017	✓	**21-Jul-2017**	30-Aug-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	27-Jul-2017	✓	**21-Jul-2017**	27-Jul-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS16_0.1,	ID18CASS16_0.3,	**20-Jul-2017**	**21-Jul-2017**	27-Jul-2017	✓	**21-Jul-2017**	27-Jul-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,							
ID18CASS15_0.3,	ID18CASS15_0.9,							
ID18CASS14_0.1,	ID18CASS14_0.5,							
ID18CASS14_1.5								
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS16_0.1,	ID18CASS16_0.3,	**20-Jul-2017**	**21-Jul-2017**	27-Jul-2017	✓	**21-Jul-2017**	27-Jul-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,							
ID18CASS15_0.3,	ID18CASS15_0.9,							
ID18CASS14_0.1,	ID18CASS14_0.5,							
ID18CASS14_1.5								
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS16_0.1,	ID18CASS16_0.3,	**20-Jul-2017**	**21-Jul-2017**	03-Aug-2017	✓	**21-Jul-2017**	30-Aug-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,							
ID18CASS15_0.3,	ID18CASS15_0.9,							
ID18CASS14_0.1,	ID18CASS14_0.5,							
ID18CASS14_1.5								
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS16_0.1,	ID18CASS16_0.3,	**20-Jul-2017**	**21-Jul-2017**	03-Aug-2017	✓	**21-Jul-2017**	30-Aug-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,							
ID18CASS15_0.3,	ID18CASS15_0.9,							
ID18CASS14_0.1,	ID18CASS14_0.5,							
ID18CASS14_1.5								
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS16_0.1,	ID18CASS16_0.3,	**20-Jul-2017**	**21-Jul-2017**	03-Aug-2017	✓	**21-Jul-2017**	30-Aug-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,							
ID18CASS15_0.3,	ID18CASS15_0.9,							
ID18CASS14_0.1,	ID18CASS14_0.5,							
ID18CASS14_1.5								
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS16_0.1,	ID18CASS16_0.3,	**20-Jul-2017**	**21-Jul-2017**	03-Aug-2017	✓	**21-Jul-2017**	30-Aug-2017	✓
ID18CASS16_1.0,	ID18CASS15_0.1,							
ID18CASS15_0.3,	ID18CASS15_0.9,							
ID18CASS14_0.1,	ID18CASS14_0.5,							
ID18CASS14_1.5								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	27-Jul-2017	✓	**21-Jul-2017**	27-Jul-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS16_0.1, ID18CASS16_0.3, ID18CASS16_1.0, ID18CASS15_0.1, ID18CASS15_0.3, ID18CASS15_0.9, ID18CASS14_0.1, ID18CASS14_0.5, ID18CASS14_1.5	**20-Jul-2017**	**21-Jul-2017**	27-Jul-2017	✓	**21-Jul-2017**	27-Jul-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	3	21	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	3	21	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	3	21	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY RECORD

Page 1 of 3

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number: 3134145	GHD Office: Melb
Project: Edithvale Lx Removal	
GHD Project Manager: J. Hixon	GHD Contact: A. Wilson
Requested Completion Date: Standard	Quote No./GHD Reference

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results.**
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix (S: Soil, SL: Sludge, W: Water, A: Air, GW: Groundwater)	Preservative	Container Type (J: soil jar, B: bag, V: vial, G: glass bottle, P: plastic bottle)	Container Number	Container Volume (mL)	Analyses Required: Asb Fieldscreen	Analyses Required: Metals 6/21	Remarks
1	1D1&1D18CASS16_0.1	20/7/17	Am		S		B/J			✓	✓	
2	1D18 CASS16 _ 0.3	20/7/17					J				✓	
3	0.5						B			✓		
4	1						B/J			✓	✓	
5	1.5						B			✓		
6	2									✓		
7	2.5									✓		
8	3									✓		
9	3.5									✓		
10	4									✓		
11	4.5									✓		
12	5						J			✓		
13	1D18CASS15_0.1						B/J			✓	✓	
14	_0.3						J				✓	
15	_0.5						B			✓		
16	_0.9						J				✓	

Environmental Division
Melbourne
Work Order Reference
EM1709564

Telephone : +61-3-8549 9600

Sampled by: ADW	Date/Time 20/7/17 am/pm	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier: Gilbert	Date/Time 20-07-17 · 15	Relinquished by:	Date/Time
Received by Lab: Tom (ALS)	Date/Time 15 00		
Remarks: 15:45, 20.7			

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number	GHD Office
Project	
GHD Project Manager	GHD Contact
Requested Completion Date	Quote No./GHD Reference

Laboratory:
Address:
Laboratory Contact:

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Results to be provided in ESDAT compatibile format

Sample I.D.	Date	Time	Composite Sample	Sample Matrix (S: Soil, SL: Sludge, W: Water, A: Air, GW: Groundwater)	Preservative	Container Type (J: soil jar, B: bag, V: viel, G: glass bottle, P: plastic bottle)	Container Number	Container Volume (mL)	Analyses Required: ASS Field screen	1w2646621	Remarks
1 1018CASS15_1	20/3/17	Am		S		B			✓		
2 1.5									✓		
3 2									✓		
4 2.5									✓		
5 3									✓		
6 3.5									✓		
7 4									✓		
8 4.5									✓		
9 5									✓		
10 1018CASS14_0.1		Pm				B/J			✓	✓	
11 0.5						-"-			✓	✓	
12 1						B			✓		
13 1.5						B/J			✓	✓	
14 2						B			✓		
15 2.5									✓		
16 3									✓		

Sampled by:	Date/Time	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier:	Date/Time	Relinquished by:	Date/Time
Received by Lab: Tom (ALS)	Date/Time 15:45, 20/3/17		
Remarks:			

CHAIN OF CUSTODY RECORD

GHD

GHD Melbourne
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Telephone: 613 8687 8000 Facsimile: 613 8687 8111
Email: vic_enviro_labreports@ghd.com.au

GHD Geelong
Email: gexmail@ghd.com.au

GHD Morwell
Email: mwlmail@ghd.com.au

Job Number	GHD Office	Laboratory:
Project		Address:
GHD Project Manager	GHD Contact	Laboratory Contact:
Requested Completion Date	Quote No./GHD Reference	

PLEASE NOTE:
Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact should sign white copy** and fax to GHD Contact.
On completion of analyses please **return white copy with results.**
Yellow copy is retained by laboratory.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the e-mail address of the relevant GHD office and cc GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.
Results to be provided in ESDAT compatibile format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil SL: Sludge W: Water A: Air GW: Groundwater	Preservative	Container Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS field screen	Remarks
3	SID18CASS14-3.5	20/7/17	PM		S		B			✓	
4	4									✓	
5	4.5									✓	
6	5									✓	
7	5.5									✓	
8	6									✓	
9	6.5									✓	
10	7									✓	
11	QC1-200717									✓	
12	DUP1-200717									✓	
13	SID46CASS07-15.5									✓	
14	-11- -16									✓	

Sampled by:	Date/Time	Relinquished by:	Date/Time
Received by:	Date/Time	Relinquished by:	Date/Time
Received by Courier:	Date/Time	Relinquished by:	Date/Time
Received by Lab: Tom (AVS)	Date/Time 15:45, 20-7		
Remarks:			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709666**	Page	: 1 of 4
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 21-Jul-2017 15:15
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 07-Sep-2017 11:40
Sampler	: JR		
Site	: Edithvale - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (07/09/2017): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sam Singleton on 7th September 2017. All analysis results are as per the previous report.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46_CASS07_17	ID46_CASS07_QC2	ID46_CASS07_QC3	ID46_CASS07_16.0	ID46_CASS07_16.5
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709666-001	EM1709666-002	EM1709666-003	EM1709666-004	EM1709666-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**9.1**	**9.0**	**9.1**	**9.1**	**9.4**
pH (Fox)	----	0.1	pH Unit	**7.9**	**8.6**	**8.0**	**7.2**	**5.8**
Reaction Rate	----	1	-	**4**	**4**	**4**	**4**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46_CASS07_17.5	ID46_CASS07_18.0	ID46_CASS07_18.5	ID46_CASS07_19.0	----
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit		EM1709666-006	EM1709666-007	EM1709666-008	EM1709666-009	--------
					Result	Result	Result	Result	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**9.2**	**9.3**	**9.0**	**9.2**	**----**
pH (Fox)	----	0.1	pH Unit		**8.1**	**8.0**	**7.7**	**7.7**	**----**
Reaction Rate	----	1	-		**4**	**4**	**4**	**4**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709666**	Page	: 1 of 3
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 21-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 07-Sep-2017
Sampler	: JR		
Site	: Edithvale - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 9		
No. of samples analysed	: 9		

ilac-MRA NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709666**	Page	: 1 of 4
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 21-Jul-2017
Site	: Edithvale - LXRA	Issue Date	: 07-Sep-2017
Sampler	: JR	No. of samples received	: 9
Order number	: 60506004.1.1	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID46_CASS07_17, ID46_CASS07_QC2, ID46_CASS07_QC3, ID46_CASS07_16.0, ID46_CASS07_16.5, ID46_CASS07_17.5, ID46_CASS07_18.0, ID46_CASS07_18.5, ID46_CASS07_19.0	**21-Jul-2017**	**25-Jul-2017**	17-Jan-2018	✓	**25-Jul-2017**	17-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM1709666**		
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale - LXRA		
Sampler	: JR		

Dates

Date Samples Received	: 21-Jul-2017 15:15	Issue Date	: 07-Sep-2017
Client Requested Due Date	: 28-Jul-2017	Scheduled Reporting Date	: **26-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 2.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709666-001	21-Jul-2017 00:00	ID46_CASS07_17	✓
EM1709666-002	21-Jul-2017 00:00	ID46_CASS07_QC2	✓
EM1709666-003	21-Jul-2017 00:00	ID46_CASS07_QC3	✓
EM1709666-004	21-Jul-2017 00:00	ID46_CASS07_16.0	✓
EM1709666-005	21-Jul-2017 00:00	ID46_CASS07_16.5	✓
EM1709666-006	21-Jul-2017 00:00	ID46_CASS07_17.5	✓
EM1709666-007	21-Jul-2017 00:00	ID46_CASS07_18.0	✓
EM1709666-008	21-Jul-2017 00:00	ID46_CASS07_18.5	✓
EM1709666-009	21-Jul-2017 00:00	ID46_CASS07_19.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number: 3134145	GHD Contact: ALAN WILSON
Project: EDITHVALE - LXRA	
GHD Project Manager: JOSEPH HIXSON	GHD Contact: 21/7/17
GHD PM email:	GHD Contact email:

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil SL: Sludge W: Water A: Air GW: Groundwater	Container Type J: Soil Jar B: Bag V: Vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: AS FIELD SCREEN	SAMPLE COMMENTS
1	ID46-CASS07_QC1	21/7	PM		S	B			✓	
2	_QC2								✓	
3	_QC3								✓	
4	_16.0								✓	
5	_16.5								✓	
6	_17.5								✓	
7	_18.0								✓	
8	_18.5								✓	
9	_19.0								✓	

Environmental Division
Melbourne
Work Order Reference
EM1709666

Telephone : + 61-3-8549 9600

TOTAL NUMBER OF SAMPLES:	9
TOTAL NUMBER OF ESKIES:	1
SAMPLES/ESKY CHILLED? Y/N	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY		21/7/17 @ 15:15
GHD SERVICE CENTRE			
COURIER	JET TOM (76)	21/7/17 15:15	
LABORATORY			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709681**	Page	: 1 of 24
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 21-Jul-2017 15:55
Order number	: 60506004.1.1	Date Analysis Commenced	: 24-Jul-2017
C-O-C number	: ----	Issue Date	: 27-Jul-2017 17:51
Sampler	: APW		
Site	: Edithvale LX Removal		
Quote number	: ME/235/17		
No. of samples received	: 41		
No. of samples analysed	: 41		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1	ID18CASS02_1.3	ID18CASS02_1.5
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709681-001	EM1709681-002	EM1709681-003	EM1709681-004	EM1709681-005
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.2	6.5	----	6.6	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.0	8.2	7.9	----	7.5
pH (Fox)	----	0.1	pH Unit	5.0	5.2	4.9	----	5.0
Reaction Rate	----	1	-	2	1	1	----	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	6.0	1.2	----	1.7	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	13	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Copper	7440-50-8	5	mg/kg	82	<5	----	<5	----
Lead	7439-92-1	5	mg/kg	307	<5	----	<5	----
Molybdenum	7439-98-7	2	mg/kg	<2	6	----	<2	----
Nickel	7440-02-0	2	mg/kg	13	<2	----	<2	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	<5	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	<2	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	<5	----
Zinc	7440-66-6	5	mg/kg	111	<5	----	<5	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	70	<40	----	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1	ID18CASS02_1.3	ID18CASS02_1.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-001	EM1709681-002	EM1709681-003	EM1709681-004	EM1709681-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1	ID18CASS02_1.3	ID18CASS02_1.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-001	EM1709681-002	EM1709681-003	EM1709681-004	EM1709681-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	----	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	----	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	----	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	----	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	----	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		**1.0**	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**0.5**	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1	ID18CASS02_1.3	ID18CASS02_1.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-001	EM1709681-002	EM1709681-003	EM1709681-004	EM1709681-005
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**1.5**	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		**0.6**	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.9**	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1	ID18CASS02_1.3	ID18CASS02_1.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-001	EM1709681-002	EM1709681-003	EM1709681-004	EM1709681-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		**100**	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**100**	<50	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		**140**	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**140**	<50	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**96.1**	**102**	----	**79.3**	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**97.4**	**88.9**	----	**90.6**	----
Toluene-D8	2037-26-5	0.1	%		**96.8**	**91.6**	----	**90.8**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**100**	**97.7**	----	**96.4**	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		**107**	**111**	----	**88.2**	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**81.8**	**85.3**	----	**67.4**	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**101**	**105**	----	**83.7**	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		**96.0**	**100**	----	**75.9**	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**95.9**	**97.4**	----	**78.6**	----
2-Fluorobiphenyl	321-60-8	0.025	%		**103**	**111**	----	**92.0**	----
Anthracene-d10	1719-06-8	0.025	%		**98.0**	**104**	----	**87.2**	----
4-Terphenyl-d14	1718-51-0	0.025	%		**98.4**	**106**	----	**89.0**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS02_2	ID18CASS02_2.5	ID18CASS02_3	ID18CASS02_3.5	ID18CASS02_4
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709681-006	EM1709681-007	EM1709681-008	EM1709681-009	EM1709681-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**7.0**	**8.1**	**5.8**	**8.2**	**4.8**
pH (Fox)	----	0.1	pH Unit	**5.1**	**5.4**	**4.2**	**5.8**	**3.1**
Reaction Rate	----	1	-	**2**	**2**	**1**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS02_4.5	ID18CASS02_5	ID18CASS01_0.3	ID18CASS01_0.5	ID18CASS01_1
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709681-011	EM1709681-012	EM1709681-013	EM1709681-014	EM1709681-015
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	----	4.0	----	4.0
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	3.9	5.3	3.9	6.5	5.0
pH (Fox)	----	0.1	pH Unit	3.2	3.7	2.7	4.5	3.7
Reaction Rate	----	1	-	2	2	3	3	1
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	12.2	----	2.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	18	----	8
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	<1
Copper	7440-50-8	5	mg/kg	----	----	79	----	<5
Lead	7439-92-1	5	mg/kg	----	----	94	----	<5
Molybdenum	7439-98-7	2	mg/kg	----	----	<2	----	<2
Nickel	7440-02-0	2	mg/kg	----	----	6	----	<2
Selenium	7782-49-2	5	mg/kg	----	----	<5	----	<5
Silver	7440-22-4	2	mg/kg	----	----	<2	----	<2
Tin	7440-31-5	5	mg/kg	----	----	5	----	<5
Zinc	7440-66-6	5	mg/kg	----	----	41	----	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	40	----	<40
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_4.5	ID18CASS02_5	ID18CASS01_0.3	ID18CASS01_0.5	ID18CASS01_1
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-011	EM1709681-012	EM1709681-013	EM1709681-014	EM1709681-015
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	----	<0.2	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	----	<0.5	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		----	----	<0.02	----	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg		----	----	<0.01	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		----	----	<0.4	----	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		----	----	<0.02	----	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		----	----	<0.01	----	<0.01
Chloroform	67-66-3	0.02	mg/kg		----	----	<0.02	----	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		----	----	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		----	----	<0.01	----	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg		----	----	<0.02	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		----	----	<0.02	----	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		----	----	<0.04	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		----	----	<0.02	----	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		----	----	<0.01	----	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		----	----	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		----	----	<0.02	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		----	----	<0.02	----	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		----	----	<0.02	----	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		----	----	<0.02	----	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		----	----	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		----	----	<0.01	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		----	----	<0.01	----	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	----	<0.03	----	<0.03
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	----	<0.03	----	<0.03
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	----	<0.03	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	----	<0.03	----	<0.03
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_4.5	ID18CASS02_5	ID18CASS01_0.3	ID18CASS01_0.5	ID18CASS01_1
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-011	EM1709681-012	EM1709681-013	EM1709681-014	EM1709681-015
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	<0.05	----	<0.05
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	<0.03	----	<0.03
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	<0.05	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg		----	----	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg		----	----	<1	----	<1
2.4-Dimethylphenol	105-67-9	1	mg/kg		----	----	<1	----	<1
2.4-Dinitrophenol	51-28-5	5	mg/kg		----	----	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg		----	----	<5	----	<5
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		----	----	<5	----	<5
Dinoseb	88-85-7	5	mg/kg		----	----	<5	----	<5
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		----	----	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	**0.8**	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	**0.9**	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	**0.6**	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	**0.6**	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	**1.3**	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	**0.7**	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	<0.5	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_4.5	ID18CASS02_5	ID18CASS01_0.3	ID18CASS01_0.5	ID18CASS01_1
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-011	EM1709681-012	EM1709681-013	EM1709681-014	EM1709681-015
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	**4.9**	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	**0.9**	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	**1.2**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	**1.4**	----	**1.2**
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		----	----	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		----	----	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg		----	----	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		----	----	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg		----	----	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg		----	----	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg		----	----	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		----	----	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		----	----	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		----	----	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		----	----	<0.03	----	<0.03
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg		----	----	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		----	----	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg		----	----	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		----	----	<0.03	----	<0.03
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		----	----	<0.03	----	<0.03
4.4`-DDT	50-29-3	0.05	mg/kg		----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		----	----	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		----	----	<0.03	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		----	----	<0.03	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	<0.05	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg		----	----	<0.03	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		----	----	<0.03	----	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	<10	----	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS02_4.5	ID18CASS02_5	ID18CASS01_0.3	ID18CASS01_0.5	ID18CASS01_1
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-011	EM1709681-012	EM1709681-013	EM1709681-014	EM1709681-015
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		----	----	130	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	110	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	240	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg		----	----	210	----	<100
>C34 - C40 Fraction	----	100	mg/kg		----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	210	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	<50	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	<10	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	102	----	101
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	----	94.5	----	95.4
Toluene-D8	2037-26-5	0.1	%		----	----	93.0	----	96.0
4-Bromofluorobenzene	460-00-4	0.1	%		----	----	101	----	100
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		----	----	104	----	110
2-Chlorophenol-D4	93951-73-6	0.025	%		----	----	75.2	----	84.5
2.4.6-Tribromophenol	118-79-6	0.025	%		----	----	103	----	109
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		----	----	89.2	----	98.9
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	----	87.7	----	96.5
2-Fluorobiphenyl	321-60-8	0.025	%		----	----	99.6	----	110
Anthracene-d10	1719-06-8	0.025	%		----	----	94.6	----	103
4-Terphenyl-d14	1718-51-0	0.025	%		----	----	95.8	----	105

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS01_1.5	ID18CASS01_2	ID18CASS01_2.5	ID18CASS01_3	ID18CASS01_3.5
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709681-016	EM1709681-017	EM1709681-018	EM1709681-019	EM1709681-020
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.1	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.8	7.3	6.9	4.6	5.6
pH (Fox)	----	0.1	pH Unit	4.0	5.5	4.8	3.7	4.1
Reaction Rate	----	1	-	1	2	1	1	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.1	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	<40	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS01_1.5	ID18CASS01_2	ID18CASS01_2.5	ID18CASS01_3	ID18CASS01_3.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-016	EM1709681-017	EM1709681-018	EM1709681-019	EM1709681-020
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS01_1.5	ID18CASS01_2	ID18CASS01_2.5	ID18CASS01_3	ID18CASS01_3.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-016	EM1709681-017	EM1709681-018	EM1709681-019	EM1709681-020
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS01_1.5	ID18CASS01_2	ID18CASS01_2.5	ID18CASS01_3	ID18CASS01_3.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-016	EM1709681-017	EM1709681-018	EM1709681-019	EM1709681-020
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS01_1.5	ID18CASS01_2	ID18CASS01_2.5	ID18CASS01_3	ID18CASS01_3.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-016	EM1709681-017	EM1709681-018	EM1709681-019	EM1709681-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**80.2**	----	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**94.1**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**93.7**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**93.5**	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		**115**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**114**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**123**	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		**111**	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**113**	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		**119**	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		**124**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		**130**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS01_4	ID18CASS01_4.5	ID18CASS01_5	ID18CASS13_2	ID18CASS13_2.5
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-021	EM1709681-022	EM1709681-023	EM1709681-024	EM1709681-025
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**4.5**	**4.3**	**5.2**	**6.2**	**5.9**
pH (Fox)	----	0.1	pH Unit		**3.5**	**3.3**	**3.6**	**4.7**	**4.8**
Reaction Rate	----	1	-		**1**	**1**	**2**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS13_3	ID18CASS13_3.5	ID18CASS13_4	ID18CASS13_4.5	ID18CASS13_5.5
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709681-026	EM1709681-027	EM1709681-028	EM1709681-029	EM1709681-030
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.4**	**4.8**	**4.2**	**4.6**	**5.2**
pH (Fox)	----	0.1	pH Unit	**4.4**	**3.1**	**2.7**	**2.9**	**3.7**
Reaction Rate	----	1	-	**1**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS13_6	ID18CASS13_6.5	ID18CASS13_7	ID18CASS13_7.5	ID18CASS13_8
				Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709681-031	EM1709681-032	EM1709681-033	EM1709681-034	EM1709681-035
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.2**	**5.4**	**5.5**	**5.7**	**6.6**
pH (Fox)	----	0.1	pH Unit		**4.4**	**4.3**	**4.1**	**3.9**	**1.8**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS13_8.5	ID18CASS13_9	ID18CASS13_9.5	ID18CASS13_10	DUP1 210717
			Client sampling date / time	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00	21-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709681-036	EM1709681-037	EM1709681-038	EM1709681-039	EM1709681-040
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.4**	**6.1**	**6.2**	**7.3**	**5.6**
pH (Fox)	----	0.1	pH Unit	**2.2**	**2.4**	**1.9**	**2.0**	**4.0**
Reaction Rate	----	1	-	**2**	**1**	**1**	**4**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS13_5	----	----	----	----
				Client sampling date / time	21-Jul-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1709681-041	--------	--------	--------	--------
					Result	----	----	----	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.2**	----	----	----	----
pH (Fox)	----	0.1	pH Unit		**2.9**	----	----	----	----
Reaction Rate	----	1	-		**2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709681**	Page	: 1 of 14
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 21-Jul-2017 15:55
Order number	: 60506004.1.1	Date Analysed	: 24-Jul-2017
C-O-C number	: ----	Date Issued	: 27-Jul-2017 17:51
No. of samples received	: 41		
No. of samples analysed	: 41	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Category C

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits	Result
ID18CASS01_0.3	**EM1709681-013**	pH (CaCl2)	EA001	0.1	*> 4 pH Unit< 9 pH Unit*	**4.0 pH Unit**
ID18CASS01_1	**EM1709681-015**	pH (CaCl2)	EA001	0.1	*> 4 pH Unit< 9 pH Unit*	**4.0 pH Unit**

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits	Result
ID18CASS02_0.1	**EM1709681-001**	Lead	EG005T	5	*< 300 mg/kg*	**307 mg/kg**
ID18CASS01_0.3	**EM1709681-013**	pH (CaCl2)	EA001	0.1	*> 4 pH Unit< 9 pH Unit*	**4.0 pH Unit**
ID18CASS01_1	**EM1709681-015**	pH (CaCl2)	EA001	0.1	*> 4 pH Unit< 9 pH Unit*	**4.0 pH Unit**

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	ID18CASS02_ 0.1	ID18CASS02_ 0.5	ID18CASS02_ 1.3	ID18CASS01_ 0.3	ID18CASS01_ 1
Client sample ID										
Sampling date/time						21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017
						EM1709681-001	EM1709681-002	EM1709681-004	EM1709681-013	EM1709681-015
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**6.2**	**6.5**	**6.6**	**4.0**	**4.0**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	**13**	**18**	**8**
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	20000	**82**	<5	<5	**79**	<5
Lead	EG005T	5	mg/kg	----	6000	**307**	<5	<5	**94**	<5
Molybdenum	EG005T	2	mg/kg	----	4000	<2	**6**	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	12000	**13**	<2	<2	**6**	<2
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	<2	<2
Zinc	EG005T	5	mg/kg	----	140000	**111**	<5	<5	**41**	<5
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	**70**	<40	<40	**40**	<40
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	**0.5**	<0.5	<0.5	**0.7**	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1.3	ID18CASS01_0.3	ID18CASS01_1
Client sample ID										
Sampling date/time						21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017
						EM1709681-001	EM1709681-002	EM1709681-004	EM1709681-013	EM1709681-015
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	**1.5**	<0.5	<0.5	**4.9**	<0.5
EP075I: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	**100**	<50	<50	**240**	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time* ID18CASS02_0.1 21-Jul-2017 EM1709681-001	ID18CASS02_0.5 21-Jul-2017 EM1709681-002	ID18CASS02_1.3 21-Jul-2017 EM1709681-004	ID18CASS01_0.3 21-Jul-2017 EM1709681-013	ID18CASS01_1 21-Jul-2017 EM1709681-015
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**6.2**	**6.5**	**6.6**	**4.0**	**4.0**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	500	<5	<5	**13**	**18**	**8**
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	5000	**82**	<5	<5	**79**	<5
Lead	EG005T	5	mg/kg	----	1500	**307**	<5	<5	**94**	<5
Molybdenum	EG005T	2	mg/kg	----	1000	<2	**6**	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	3000	**13**	<2	<2	**6**	<2
Selenium	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	180	<2	<2	<2	<2	<2
Tin	EG005T	5	mg/kg	----	500	<5	<5	<5	**5**	<5
Zinc	EG005T	5	mg/kg	----	35000	**111**	<5	<5	**41**	<5
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	10000	**70**	<40	<40	**40**	<40
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	**0.5**	<0.5	<0.5	**0.7**	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1.3	ID18CASS01_0.3	ID18CASS01_1
						Sampling date/time: 21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017
						EM1709681-001	EM1709681-002	EM1709681-004	EM1709681-013	EM1709681-015
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	**1.5**	<0.5	<0.5	**4.9**	<0.5
EP075I: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	**100**	<50	<50	**240**	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

				Client sample ID		ID18CASS02_0.1	ID18CASS02_0.5	ID18CASS02_1.3	ID18CASS01_0.3	ID18CASS01_1
				Sampling date/time		21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017	21-Jul-2017
Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	EM1709681-001	EM1709681-002	EM1709681-004	EM1709681-013	EM1709681-015
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**6.2**	**6.5**	**6.6**	**4.0**	**4.0**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	**13**	**18**	**8**
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	100	**82**	<5	<5	**79**	<5
Lead	EG005T	5	mg/kg	----	300	**307**	<5	<5	**94**	<5
Molybdenum	EG005T	2	mg/kg	----	40	<2	**6**	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	60	**13**	<2	<2	**6**	<2
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	<2	<2
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	**5**	<5
Zinc	EG005T	5	mg/kg	----	200	**111**	<5	<5	**41**	<5
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	**70**	<40	<40	**40**	<40
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	**0.5**	<0.5	<0.5	**0.7**	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS02_0.1 21-Jul-2017	**ID18CASS02_0.5** 21-Jul-2017	**ID18CASS02_1.3** 21-Jul-2017	**ID18CASS01_0.3** 21-Jul-2017	**ID18CASS01_1** 21-Jul-2017
						EM1709681-001	**EM1709681-002**	**EM1709681-004**	**EM1709681-013**	**EM1709681-015**
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	**1.5**	<0.5	<0.5	**4.9**	<0.5
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	**100**	<50	<50	**240**	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS01_1.5	----	----	----	----
				Sampling date/time			21-Jul-2017	----	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709681-016	--------	--------	--------	--------
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit		2	12.5	**4.1**	----	----	----	----
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	2000	**6**	----	----	----	----
Cadmium	EG005T	1	mg/kg		----	400	<1	----	----	----	----
Copper	EG005T	5	mg/kg		----	20000	<5	----	----	----	----
Lead	EG005T	5	mg/kg		----	6000	<5	----	----	----	----
Molybdenum	EG005T	2	mg/kg		----	4000	<2	----	----	----	----
Nickel	EG005T	2	mg/kg		----	12000	<2	----	----	----	----
Selenium	EG005T	5	mg/kg		----	200	<5	----	----	----	----
Silver	EG005T	2	mg/kg		----	720	<2	----	----	----	----
Zinc	EG005T	5	mg/kg		----	140000	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	300	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	2000	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	10000	<1	----	----	----	----
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg		----	40000	<40	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg		----	16	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg		----	240	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg		----	4.8	<0.02	----	----	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg		----	11	<0.02	----	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg		----	50	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg		----	320	<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg		----	2200	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	20	<0.5	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	400	<0.5	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS01_1.5 / 21-Jul-2017 / **EM1709681-016**	**----** / ---- / --------	**----** / ---- / --------	**----** / ---- / --------	**----** / ---- / --------
EP075l: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	**----**	**----**	**----**	**----**
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	**----**	**----**	**----**	**----**
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	**----**	**----**	**----**	**----**
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	**----**	**----**	**----**	**----**
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	**----**	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	**----**	**----**	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	**----**	**----**	**----**	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS01_1.5	----	----	----	----
				Sampling date/time			21-Jul-2017	----	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709681-016	--------	--------	--------	--------
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit		4	9	**4.1**	----	----	----	----
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	500	**6**	----	----	----	----
Cadmium	EG005T	1	mg/kg		----	100	<1	----	----	----	----
Copper	EG005T	5	mg/kg		----	5000	<5	----	----	----	----
Lead	EG005T	5	mg/kg		----	1500	<5	----	----	----	----
Molybdenum	EG005T	2	mg/kg		----	1000	<2	----	----	----	----
Nickel	EG005T	2	mg/kg		----	3000	<2	----	----	----	----
Selenium	EG005T	5	mg/kg		----	50	<5	----	----	----	----
Silver	EG005T	2	mg/kg		----	180	<2	----	----	----	----
Tin	EG005T	5	mg/kg		----	500	<5	----	----	----	----
Zinc	EG005T	5	mg/kg		----	35000	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	75	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	500	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	2500	<1	----	----	----	----
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg		----	10000	<40	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg		----	4	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg		----	70	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg		----	1.2	<0.02	----	----	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg		----	2.8	<0.02	----	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg		----	10	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg		----	560	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	5	<0.5	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS01_1.5	----	----	----	----
				Sampling date/time			21-Jul-2017	----	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709681-016	--------	--------	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100		<0.5	----	----	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2		<0.03	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2		<0.03	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50		<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4		<0.03	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650		<10	----	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000		<50	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS01_1.5 / 21-Jul-2017 / **EM1709681-016**	---- / ---- / --------	---- / ---- / --------	---- / ---- / --------	---- / ---- / --------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**4.1**	----	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	**6**	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	3	<1	----	----	----	----
Copper	EG005T	5	mg/kg	----	100	<5	----	----	----	----
Lead	EG005T	5	mg/kg	----	300	<5	----	----	----	----
Molybdenum	EG005T	2	mg/kg	----	40	<2	----	----	----	----
Nickel	EG005T	2	mg/kg	----	60	<2	----	----	----	----
Selenium	EG005T	5	mg/kg	----	10	<5	----	----	----	----
Silver	EG005T	2	mg/kg	----	10	<2	----	----	----	----
Tin	EG005T	5	mg/kg	----	50	<5	----	----	----	----
Zinc	EG005T	5	mg/kg	----	200	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	----	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	<40	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	----	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	----	----	----	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	----	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS01_1.5	**----**	**----**	**----**	**----**
						21-Jul-2017	----	----	----	----
						EM1709681-016	**--------**	**--------**	**--------**	**--------**
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	<0.5	**----**	**----**	**----**	**----**
EP075I: Organochlorine Pesticides										
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	**----**	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	**----**	**----**	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	**----**	**----**	**----**	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709681**	Page	: 1 of 11
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 21-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 24-Jul-2017
C-O-C number	: ----	Issue Date	: 27-Jul-2017
Sampler	: APW		
Site	: Edithvale LX Removal		
Quote number	: ME/235/17		
No. of samples received	: 41		
No. of samples analysed	: 41		

ilac-MRA NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1014652)									
EM1709555-003	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.3	7.4	1.36	0% - 20%
EM1709589-017	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.9	5.9	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1014653)									
EM1709681-004	ID18CASS02_1.3	EA001: pH (CaCl2)	----	0.1	pH Unit	6.6	6.5	1.53	0% - 20%
EM1709734-003	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.7	1.29	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1014596)									
EM1709674-005	Anonymous	EA055: Moisture Content	----	1	%	8.7	9.6	9.87	No Limit
EM1709681-004	ID18CASS02_1.3	EA055: Moisture Content	----	1	%	1.7	1.5	11.9	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1014672)									
EM1709590-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	14	17.3	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	95	83	13.6	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	17	19.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	7	0.00	No Limit
EM1709681-001	ID18CASS02_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	13	15	14.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1014672) - continued									
EM1709681-001	ID18CASS02_0.1	EG005T: Copper	7440-50-8	5	mg/kg	82	89	8.93	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	307	356	14.8	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	111	131	17.1	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1014673)									
EM1709681-001	ID18CASS02_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1014657)									
EM1709499-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709657-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1015107)									
EM1709499-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1709657-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1014655)									
EM1709681-001	ID18CASS02_0.1	EK040T: Fluoride	16984-48-8	40	mg/kg	70	70	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1014628)									
EM1709681-002	ID18CASS02_0.5	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1013479)									
EM1709681-001	ID18CASS02_0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1013479)									
EM1709681-001	ID18CASS02_0.1	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1013479)									
EM1709681-001	ID18CASS02_0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1013479) - continued									
EM1709681-001	ID18CASS02_0.1	EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1014629)									
EM1709681-002	ID18CASS02_0.5	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1014629)									
EM1709681-002	ID18CASS02_0.5	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1014629)									
EM1709681-002	ID18CASS02_0.5	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1014629) - continued									
EM1709681-002	ID18CASS02_0.5	EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1014629)									
EM1709681-002	ID18CASS02_0.5	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1013479)									
EM1709681-001	ID18CASS02_0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1014630)									
EM1709681-002	ID18CASS02_0.5	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1013479)									
EM1709681-001	ID18CASS02_0.1	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1014630)									
EM1709681-002	ID18CASS02_0.5	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1014630) - continued									
EM1709681-002	ID18CASS02_0.5	EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1014672)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.3	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	101	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	98.3	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	104	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	83.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	98.6	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1014673)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1014657)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.2	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1015107)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	98.8	80	110
EK040T: Fluoride Total (QCLot: 1014655)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	98.1	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1014628)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	96.2	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1013479)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	108	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	109	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	107	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	104	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	101	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	101	70	116
EP074H: Naphthalene (QCLot: 1013479)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.6	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1013479)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	132	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	120	62	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1013479) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	99.7	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	111	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	97.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.5	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	115	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	115	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.8	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	106	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	93.7	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	110	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	100	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	84.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	115	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	108	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	101	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	98.5	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	104	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1014629)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	96.4	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	101	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	99.6	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	98.4	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	96.2	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	96.7	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	83.4	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	91.0	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	66.9	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1014629)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	99.6	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	95.2	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	100	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	114	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	58.6	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	124	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	88.4	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	70.3	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	54.0	12	132

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1014629)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	100	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	101	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	100	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	102	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	96.3	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	95.9	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	96.9	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	97.0	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	99.2	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	101	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	103	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	100	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.7	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.9	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	95.0	55	137
EP075I: Organochlorine Pesticides (QCLot: 1014629)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.8	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	95.3	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	99.7	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.7	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	94.1	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	91.1	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	93.4	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	92.7	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	91.5	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	91.5	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	98.0	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	89.5	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	94.8	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	82.1	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	95.9	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	95.2	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	96.7	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	108	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	89.7	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	106	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1013479)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	104	69	114

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1014630)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	99.6	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	98.3	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	97.4	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1013479)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	103	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1014630)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	99.8	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	98.3	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	84.6	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1014672)							
EM1709681-002	ID18CASS02_0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.5	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	94.4	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	96.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	80.0	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	89.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	94.1	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	98.1	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1014673)							
EM1709681-002	ID18CASS02_0.5	EG035T: Mercury	7439-97-6	5 mg/kg	77.3	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1014657)							
EM1709499-029	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	91.7	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1015107)							
EM1709499-029	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	107	77	113
EK040T: Fluoride Total (QCLot: 1014655)							
EM1709681-002	ID18CASS02_0.5	EK040T: Fluoride	16984-48-8	400 mg/kg	92.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1014628)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1014628) - continued							
EM1709681-002	ID18CASS02_0.5	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	93.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1013479)							
EM1709681-002	ID18CASS02_0.5	EP074-UT: Benzene	71-43-2	2 mg/kg	99.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	96.2	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1013479)							
EM1709681-002	ID18CASS02_0.5	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	112	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	97.3	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	93.8	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1014629)							
EM1709681-004	ID18CASS02_1.3	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	87.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	71.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	14.2	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1014629)							
EM1709681-004	ID18CASS02_1.3	EP075-EM: Phenol	108-95-2	1 mg/kg	73.3	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	64.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1014629)							
EM1709681-004	ID18CASS02_1.3	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	92.8	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	92.0	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1013479)							
EM1709681-002	ID18CASS02_0.5	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	87.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1014630)							
EM1709681-013	ID18CASS01_0.3	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	95.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	93.6	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	94.2	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1013479)							
EM1709681-002	ID18CASS02_0.5	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	85.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1014630)							
EM1709681-013	ID18CASS01_0.3	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	95.4	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	93.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	96.6	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709681**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 21-Jul-2017
Site	: Edithvale LX Removal	Issue Date	: 27-Jul-2017
Sampler	: APW	No. of samples received	: 41
Order number	: 60506004.1.1	No. of samples analysed	: 41

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
ID18CASS02_0.1, ID18CASS02_0.5, ID18CASS02_1.3, ID18CASS01_0.3, ID18CASS01_1, ID18CASS01_1.5	**21-Jul-2017**	**26-Jul-2017**	28-Jul-2017	✓	**26-Jul-2017**	26-Jul-2017	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18CASS02_0.1, ID18CASS02_0.5, ID18CASS02_1, ID18CASS02_1.5, ID18CASS02_2, ID18CASS02_2.5, ID18CASS02_3, ID18CASS02_3.5, ID18CASS02_4, ID18CASS02_4.5, ID18CASS02_5, ID18CASS01_0.3, ID18CASS01_0.5, ID18CASS01_1, ID18CASS01_1.5, ID18CASS01_2, ID18CASS01_2.5, ID18CASS01_3, ID18CASS01_3.5, ID18CASS01_4, ID18CASS01_4.5, ID18CASS01_5, ID18CASS13_2, ID18CASS13_2.5, ID18CASS13_3, ID18CASS13_3.5, ID18CASS13_4, ID18CASS13_4.5, ID18CASS13_5.5, ID18CASS13_6, ID18CASS13_6.5, ID18CASS13_7, DUP1 210717, ID18CASS13_7.5, ID18CASS13_8, ID18CASS13_8.5, ID18CASS13_9, ID18CASS13_9.5, ID18CASS13_10, ID18CASS13_5	**21-Jul-2017**	**25-Jul-2017**	17-Jan-2018	✓	**25-Jul-2017**	17-Jan-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
ID18CASS02_0.1, ID18CASS02_0.5, ID18CASS02_1.3, ID18CASS01_0.3, ID18CASS01_1, ID18CASS01_1.5	**21-Jul-2017**	**----**	----	----	**25-Jul-2017**	04-Aug-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	17-Jan-2018	✓	**26-Jul-2017**	17-Jan-2018	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	18-Aug-2017	✓	**26-Jul-2017**	18-Aug-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	18-Aug-2017	✓	**25-Jul-2017**	01-Aug-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**26-Jul-2017**	08-Aug-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	18-Aug-2017	✓	**26-Jul-2017**	18-Aug-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**24-Jul-2017**	28-Jul-2017	✓	**26-Jul-2017**	28-Jul-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**24-Jul-2017**	28-Jul-2017	✓	**26-Jul-2017**	28-Jul-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**24-Jul-2017**	28-Jul-2017	✓	**26-Jul-2017**	28-Jul-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**24-Jul-2017**	28-Jul-2017	✓	**26-Jul-2017**	28-Jul-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
Soil Glass Jar - Unpreserved (EP071-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**24-Jul-2017**	28-Jul-2017	✓	**26-Jul-2017**	28-Jul-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							
Soil Glass Jar - Unpreserved (EP071-EM)								
ID18CASS02_0.1,	ID18CASS02_0.5,	**21-Jul-2017**	**25-Jul-2017**	04-Aug-2017	✓	**25-Jul-2017**	03-Sep-2017	✓
ID18CASS02_1.3,	ID18CASS01_0.3,							
ID18CASS01_1,	ID18CASS01_1.5							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	36	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709681**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX Removal		
Sampler	: APW		

Dates

Date Samples Received	: 21-Jul-2017 15:55	Issue Date	: 24-Jul-2017
Client Requested Due Date	: 28-Jul-2017	Scheduled Reporting Date	: **28-Jul-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 8.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 41 / 41

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 WRG 621
EM1709681-001	21-Jul-2017 00:00	ID18CASS02_0.1	✓	✓	✓
EM1709681-002	21-Jul-2017 00:00	ID18CASS02_0.5	✓	✓	✓
EM1709681-003	21-Jul-2017 00:00	ID18CASS02_1	✓		
EM1709681-004	21-Jul-2017 00:00	ID18CASS02_1.3		✓	✓
EM1709681-005	21-Jul-2017 00:00	ID18CASS02_1.5	✓		
EM1709681-006	21-Jul-2017 00:00	ID18CASS02_2	✓		
EM1709681-007	21-Jul-2017 00:00	ID18CASS02_2.5	✓		
EM1709681-008	21-Jul-2017 00:00	ID18CASS02_3	✓		
EM1709681-009	21-Jul-2017 00:00	ID18CASS02_3.5	✓		
EM1709681-010	21-Jul-2017 00:00	ID18CASS02_4	✓		
EM1709681-011	21-Jul-2017 00:00	ID18CASS02_4.5	✓		
EM1709681-012	21-Jul-2017 00:00	ID18CASS02_5	✓		
EM1709681-013	21-Jul-2017 00:00	ID18CASS01_0.3	✓	✓	✓
EM1709681-014	21-Jul-2017 00:00	ID18CASS01_0.5	✓		
EM1709681-015	21-Jul-2017 00:00	ID18CASS01_1	✓	✓	✓
EM1709681-016	21-Jul-2017 00:00	ID18CASS01_1.5	✓	✓	✓
EM1709681-017	21-Jul-2017 00:00	ID18CASS01_2	✓		
EM1709681-018	21-Jul-2017 00:00	ID18CASS01_2.5	✓		
EM1709681-019	21-Jul-2017 00:00	ID18CASS01_3	✓		
EM1709681-020	21-Jul-2017 00:00	ID18CASS01_3.5	✓		
EM1709681-021	21-Jul-2017 00:00	ID18CASS01_4	✓		
EM1709681-022	21-Jul-2017 00:00	ID18CASS01_4.5	✓		
EM1709681-023	21-Jul-2017 00:00	ID18CASS01_5	✓		
EM1709681-024	21-Jul-2017 00:00	ID18CASS13_2	✓		
EM1709681-025	21-Jul-2017 00:00	ID18CASS13_2.5	✓		
EM1709681-026	21-Jul-2017 00:00	ID18CASS13_3	✓		
EM1709681-027	21-Jul-2017 00:00	ID18CASS13_3.5	✓		
EM1709681-028	21-Jul-2017 00:00	ID18CASS13_4	✓		
EM1709681-029	21-Jul-2017 00:00	ID18CASS13_4.5	✓		
EM1709681-030	21-Jul-2017 00:00	ID18CASS13_5.5	✓		
EM1709681-031	21-Jul-2017 00:00	ID18CASS13_6	✓		
EM1709681-032	21-Jul-2017 00:00	ID18CASS13_6.5	✓		
EM1709681-033	21-Jul-2017 00:00	ID18CASS13_7	✓		
EM1709681-034	21-Jul-2017 00:00	ID18CASS13_7.5	✓		
EM1709681-035	21-Jul-2017 00:00	ID18CASS13_8	✓		

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1709681-036	21-Jul-2017 00:00	ID18CASS13_8.5	✓		
EM1709681-037	21-Jul-2017 00:00	ID18CASS13_9	✓		
EM1709681-038	21-Jul-2017 00:00	ID18CASS13_9.5	✓		
EM1709681-039	21-Jul-2017 00:00	ID18CASS13_10	✓		
EM1709681-040	21-Jul-2017 00:00	DUP1 210717	✓		
EM1709681-041	21-Jul-2017 00:00	ID18CASS13_5	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

NAVJOT KAUR

- *AU Certificate of Analysis - NATA (COA)	Email	navjot.kaur@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	navjot.kaur@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	navjot.kaur@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	navjot.kaur@aecom.com
- Chain of Custody (CoC) (COC)	Email	navjot.kaur@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	navjot.kaur@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	navjot.kaur@aecom.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	navjot.kaur@aecom.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: Standard

Quote # / GHD Reference:

Job Number	GHD Contact
3134145	A. Wilson
Project	
Edithvale Ck Removal	
GHD Project Manager	**GHD Contact**
J. Hixon	A. Wilson
GHD PM email	**GHD Contact email**

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

	Sample I.D.	Date	Time	Composite Samples	Sample Matrix S: Soil, SL: Sludge W: Water, A: Air, GW: Groundwater	Container Type: J: 60ml jar, B: bag, G: 250ml glass bottle, P: plastic bottle, R: Ringbag	Container Volume (mL)	Analyses Required: ASS Field screen	Analyses Required: 1wEC 62H
1	ID18CASS02-0.1	21/7/17	AM		S	B/J		✓	✓
2	-0.5					-"-		✓	✓
3	-1					B		✓	
4	-1.3					J			✓
5	1.5					B		✓	
6	2							✓	
7	2.5							✓	
8	3							✓	
9	3.5							✓	
10	4							✓	
11	4.5							✓	
12	5							✓	
13	ID18CASS01 - 0.3					B/J		✓	✓
14	0.5					B		✓	
15	1					B/J		✓	✓
16	1.5					-"-		✓	✓
17	2					B		✓	

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

SAMPLE COMMENTS

Please forward Sample DUP2-210717 to Eurofins (freeze over weekend if required)

TOTAL NUMBER OF SAMPLES:
TOTAL NUMBER OF ESKIES:
SAMPLES/ESKY CHILLED? Y / N
GENERAL COMMENTS:

Forwarded to Secondary Lab
Initials AM Date 21/7

Environmental Division
Melbourne
Work Order Reference
EM1709681

Telephone : + 61-3-8549 9600

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	ADW	21/07/17	
GHD SERVICE CENTRE			
COURIER	JET Tom (76)	21/07/17 3:30	
LABORATORY (ALS)	Issued 6 units	21/7/17 1555	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil SL: Sludge W: Water A: Air GW: Groundwater	Container Type J: Soil jar B: bag V: vial G: glass bottle P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS field screen	SAMPLE COMMENTS
18	ID18CASS01-2.5	21/7/17	Am		S	B				
19	ID18CASS01_3									
20	3.5									
21	4									
22	4.5									
23	5									
24	ID18CASS13-2		Pm							
25	2.5									
26	3									
27	3.5									
28	4									
29	4.5									
30	5.5									
31	6									
32	6.5									
33	7 8									
34	7.5									

TOTAL NUMBER OF SAMPLES:	
TOTAL NUMBER OF ESKIES:	
SAMPLES/ESKY CHILLED? Y / N	

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	(ALS) Isaac Banko	21/7/17 1555	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil, SK: Sludge W: Water A: Air GW: Groundwater	Container Type J: Soil jar, B: Bag, V: Vial, G: glass bottle P: plastic bottle	Container Number	Container Volume (ml)	Analyses Required: ASS Field Screen	SAMPLE COMMENTS
35	ID18CASS13-8	21/7/17	PM		S	B			✓	
36	8.5								✓	
37	9								✓	
38	9.5								✓	
39	10								✓	
40	DUP121017								✓	
	extra sample		AM	21/7						
41	ID18CASS13-5.0	21/7								

TOTAL NUMBER OF SAMPLES:

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED? Y / N

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY (ALS)	Isaac Dambo	21/7/17 1555	

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EM1709732**		
Amendment	: **1**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach - LXRA		
Sampler	: JR		

Dates

Date Samples Received	: 24-Jul-2017 14:30	Issue Date	: 07-Sep-2017
Client Requested Due Date	: 31-Jul-2017	Scheduled Reporting Date	: **28-Jul-2017**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 5.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709732-001	24-Jul-2017 00:00	ID46_CASS10_QC14.5	✓
EM1709732-002	24-Jul-2017 00:00	ID46_CASS10_QC2	✓
EM1709732-003	24-Jul-2017 00:00	ID46_CASS10_15.0	✓
EM1709732-004	24-Jul-2017 00:00	ID46_CASS10_15.5	✓
EM1709732-005	24-Jul-2017 00:00	ID46_CASS10_16.0	✓
EM1709732-006	24-Jul-2017 00:00	ID46_CASS10_16.5	✓
EM1709732-007	24-Jul-2017 00:00	ID46_CASS10_17.0	✓
EM1709732-008	24-Jul-2017 00:00	ID46_CASS10_17.5	✓
EM1709732-009	24-Jul-2017 00:00	ID46_CASS10_18.0	✓
EM1709732-010	24-Jul-2017 00:00	ID46_CASS10_18.5	✓
EM1709732-011	24-Jul-2017 00:00	ID46_CASS10_19.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709732**	Page	: 1 of 5
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 24-Jul-2017 14:30
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 07-Sep-2017 12:01
Sampler	: JR		
Site	: Bonbeach - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (07/09/2017): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sam Singleton on 7th September 2017. All analysis results are as per the previous report.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Client sample ID	ID46_CASS10_QC14.5	ID46_CASS10_QC2	ID46_CASS10_15.0	ID46_CASS10_15.5	ID46_CASS10_16.0
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
					EM1709732-001	EM1709732-002	EM1709732-003	EM1709732-004	EM1709732-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.3**	**8.6**	**7.8**	**8.3**	**8.4**
pH (Fox)	----	0.1	pH Unit		**2.7**	**6.3**	**5.4**	**5.2**	**6.0**
Reaction Rate	----	1	-		**4**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46_CASS10_16.5	ID46_CASS10_17.0	ID46_CASS10_17.5	ID46_CASS10_18.0	ID46_CASS10_18.5
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709732-006	EM1709732-007	EM1709732-008	EM1709732-009	EM1709732-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**9.3**	**8.7**	**8.7**	**8.6**	**8.2**
pH (Fox)	----	0.1	pH Unit		**6.7**	**7.9**	**8.0**	**8.1**	**8.2**
Reaction Rate	----	1	-		**4**	**4**	**4**	**4**	**4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46_CASS10_19.0	----	----	----	----
			Client sampling date / time	24-Jul-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1709732-011	--------	--------	--------	--------
				Result	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.7**	----	----	----	----
pH (Fox)	----	0.1	pH Unit	**8.5**	----	----	----	----
Reaction Rate	----	1	-	**4**	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709732**	Page	: 1 of 3
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 24-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 07-Sep-2017
Sampler	: JR		
Site	: Bonbeach - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709732**	Page	: 1 of 4
Amendment	: **2**		
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 24-Jul-2017
Site	: Bonbeach - LXRA	Issue Date	: 07-Sep-2017
Sampler	: JR	No. of samples received	: 11
Order number	: 60506004.1.1	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID46_CASS10_QC14.5, ID46_CASS10_QC2, ID46_CASS10_15.0, ID46_CASS10_15.5, ID46_CASS10_16.0, ID46_CASS10_16.5, ID46_CASS10_17.0, ID46_CASS10_17.5, ID46_CASS10_18.0, ID46_CASS10_18.5, ID46_CASS10_19.0	**24-Jul-2017**	**25-Jul-2017**	20-Jan-2018	✓	**25-Jul-2017**	20-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number	GHD Contact
3134145	ALAN WILSON

Project: BONBEACH - LXRA

GHD Project Manager	GHD Contact
JOSEPH HIXSON	24/7/17

GHD PM email	GHD Contact email

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix (S: Soil, SL: Sludge, W: Water, A: Air, CM: Construction)	Container Type (P: plastic bottle, V: vial, G: glass bottle, J: jar/jar, B: bag)	Container Number	Container Volume (mL)	Analyses Required: ASS FIELD SCREEN	SAMPLE COMMENTS
1	ID46-CASS10_QC1	24/7	AM		S	B			✓	
2	-QC2								✓	
3	-15.0								✓	
4	-15.5								✓	
5	-16.0								✓	
6	-16.5								✓	
7	-17.0		PM						✓	
8	-17.5								✓	
9	-18.0								✓	
10	-18.5								✓	
11	-19.0								✓	

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Environmental Division
Melbourne
Work Order Reference
EM1709732

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED (Y) N: Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY		24/7/17 @ 13:50
GHD SERVICE CENTRE			
COURIER		24/7/17 @ 13:50	
LABORATORY	Scott (ALS)	24/7/17, 14.30	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709733**	Page	: 1 of 19
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 24-Jul-2017 14:30
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017 15:41
Sampler	: APW		
Site	: Edithvale LX Removal		
Quote number	: ME/235/17		
No. of samples received	: 37		
No. of samples analysed	: 37		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1	ID18CASS12_1.5	ID18CASS12_2
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709733-001	EM1709733-002	EM1709733-003	EM1709733-004	EM1709733-005
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.9	4.1	----	4.4	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.5	4.6	4.8	4.6	6.5
pH (Fox)	----	0.1	pH Unit	3.7	3.2	3.4	3.5	5.0
Reaction Rate	----	1	-	2	2	2	2	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.0	1.8	----	1.4	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Copper	7440-50-8	5	mg/kg	48	<5	----	<5	----
Lead	7439-92-1	5	mg/kg	96	5	----	<5	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	<2	----
Nickel	7440-02-0	2	mg/kg	3	<2	----	<2	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	<5	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	<2	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	<5	----
Zinc	7440-66-6	5	mg/kg	38	<5	----	<5	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	<40	<40	----	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1	ID18CASS12_1.5	ID18CASS12_2
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-001	EM1709733-002	EM1709733-003	EM1709733-004	EM1709733-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1	ID18CASS12_1.5	ID18CASS12_2
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-001	EM1709733-002	EM1709733-003	EM1709733-004	EM1709733-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	----	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	----	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	----	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	----	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	----	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1	ID18CASS12_1.5	ID18CASS12_2
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-001	EM1709733-002	EM1709733-003	EM1709733-004	EM1709733-005
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1	ID18CASS12_1.5	ID18CASS12_2
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-001	EM1709733-002	EM1709733-003	EM1709733-004	EM1709733-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		89.6	77.5	----	91.9	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		97.9	98.2	----	111	----
Toluene-D8	2037-26-5	0.1	%		82.8	84.4	----	95.5	----
4-Bromofluorobenzene	460-00-4	0.1	%		95.1	101	----	110	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		100	91.0	----	108	----
2-Chlorophenol-D4	93951-73-6	0.025	%		98.0	79.9	----	87.2	----
2.4.6-Tribromophenol	118-79-6	0.025	%		108	91.1	----	106	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		110	86.4	----	106	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		109	90.3	----	112	----
2-Fluorobiphenyl	321-60-8	0.025	%		105	90.1	----	109	----
Anthracene-d10	1719-06-8	0.025	%		122	98.8	----	122	----
4-Terphenyl-d14	1718-51-0	0.025	%		120	98.4	----	123	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS12_2.5	ID18CASS12_3	ID18CASS12_3.5	ID18CASS12_4	ID18CASS12_4.5
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709733-006	EM1709733-007	EM1709733-008	EM1709733-009	EM1709733-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.5**	**5.6**	**5.1**	**4.8**	**4.4**
pH (Fox)	----	0.1	pH Unit	**5.0**	**4.1**	**3.2**	**3.0**	**2.7**
Reaction Rate	----	1	-	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS12_5	ID18CASS12_5.5	ID18CASS12_6	ID18CASS12_6.5	ID18CASS12_7
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-011	EM1709733-012	EM1709733-013	EM1709733-014	EM1709733-015
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**4.4**	**5.6**	**5.5**	**5.3**	**5.6**
pH (Fox)	----	0.1	pH Unit		**3.4**	**3.9**	**3.6**	**7.8**	**3.7**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS12_7.5	ID18CASS12_8	ID18CASS12_8.5	ID18CASS12_9	ID18CASS12_9.5
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709733-016	EM1709733-017	EM1709733-018	EM1709733-019	EM1709733-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.7**	**5.7**	**5.9**	**6.3**	**7.9**
pH (Fox)	----	0.1	pH Unit	**3.1**	**2.6**	**3.5**	**4.3**	**4.2**
Reaction Rate	----	1	-	**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS12_10	ID18CASS12_10.5	ID18CASS12_11	ID18CASS12_11.5	ID18CASS12_12
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709733-021	EM1709733-022	EM1709733-023	EM1709733-024	EM1709733-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.2**	**8.1**	**7.6**	**8.3**	**8.2**
pH (Fox)	----	0.1	pH Unit	**1.9**	**2.0**	**4.6**	**2.4**	**2.5**
Reaction Rate	----	1	-	**4**	**4**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS12_12.5	ID18CASS12_13	ID18CASS12_13.5	ID18CASS12_14	DUP1_240717
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709733-026	EM1709733-027	EM1709733-028	EM1709733-029	EM1709733-030
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.0**	**7.9**	**7.7**	**8.3**	**4.7**
pH (Fox)	----	0.1	pH Unit	**3.8**	**1.9**	**2.7**	**2.5**	**2.7**
Reaction Rate	----	1	-	**2**	**2**	**3**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	DUP3_240717	DUP5_240717	ID18CASS13_0.1	ID18CASS13_0.3	ID18CASS13_0.5
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709733-031	EM1709733-032	EM1709733-033	EM1709733-034	EM1709733-035
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	4.4	5.5	5.8	5.6
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.3	----	6.6	----	6.4
pH (Fox)	----	0.1	pH Unit	1.9	----	3.8	----	4.4
Reaction Rate	----	1	-	4	----	3	----	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	1.1	9.3	2.5	1.9
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	----	<5	80	28	8
Lead	7439-92-1	5	mg/kg	----	<5	174	35	5
Molybdenum	7439-98-7	2	mg/kg	----	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	----	<2	8	8	<2
Selenium	7782-49-2	5	mg/kg	----	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	----	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	----	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	----	<5	65	22	5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	<1	<1	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	<40	<40	70	<40
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	DUP3_240717	DUP5_240717	ID18CASS13_0.1	ID18CASS13_0.3	ID18CASS13_0.5
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-031	EM1709733-032	EM1709733-033	EM1709733-034	EM1709733-035
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.1-Dichloroethene	75-35-4	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		----	<0.4	<0.4	<0.4	<0.4
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
1.2-Dichloroethane	107-06-2	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		----	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		----	<0.02	<0.02	<0.02	<0.02
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		----	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	DUP3_240717	DUP5_240717	ID18CASS13_0.1	ID18CASS13_0.3	ID18CASS13_0.5
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-031	EM1709733-032	EM1709733-033	EM1709733-034	EM1709733-035
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.03	<0.03	<0.03	<0.03	
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	<0.03	
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	----	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	----	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	<1	<1	<1	
2.4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	<1	<1	<1	
2.4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	<5	<5	<5	
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	<5	<5	<5	
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	----	<5	<5	<5	<5	
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	**0.8**	<0.5	
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	**0.9**	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	**0.5**	<0.5	
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	<0.5	**1.4**	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	**0.9**	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	**0.6**	<0.5	

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	DUP3_240717	DUP5_240717	ID18CASS13_0.1	ID18CASS13_0.3	ID18CASS13_0.5
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-031	EM1709733-032	EM1709733-033	EM1709733-034	EM1709733-035
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	<0.5	**5.1**	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	<0.5	**1.1**	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	**0.6**	**1.4**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	**1.2**	**1.6**	**1.2**
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
4.4`-DDT	50-29-3	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		----	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		----	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	DUP3_240717	DUP5_240717	ID18CASS13_0.1	ID18CASS13_0.3	ID18CASS13_0.5
				Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00	24-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709733-031	EM1709733-032	EM1709733-033	EM1709733-034	EM1709733-035
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		----	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		----	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		----	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		----	<100	**120**	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		----	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	**120**	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**93.3**	**80.8**	**79.2**	**96.8**
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	**96.0**	**99.5**	**102**	**94.1**
Toluene-D8	2037-26-5	0.1	%		----	**77.2**	**84.7**	**86.9**	**79.8**
4-Bromofluorobenzene	460-00-4	0.1	%		----	**91.8**	**99.0**	**100**	**91.9**
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		----	**114**	**96.0**	**105**	**99.3**
2-Chlorophenol-D4	93951-73-6	0.025	%		----	**83.1**	**85.5**	**87.5**	**91.3**
2.4.6-Tribromophenol	118-79-6	0.025	%		----	**107**	**97.4**	**95.9**	**97.4**
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		----	**103**	**92.2**	**95.4**	**97.4**
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	**103**	**93.1**	**93.1**	**98.0**
2-Fluorobiphenyl	321-60-8	0.025	%		----	**107**	**93.7**	**91.5**	**98.4**
Anthracene-d10	1719-06-8	0.025	%		----	**118**	**106**	**102**	**111**
4-Terphenyl-d14	1718-51-0	0.025	%		----	**116**	**96.2**	**99.8**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS13_1	ID18CASS13_1.5	----	----	----
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1709733-036	EM1709733-037	--------	--------	--------
				Result	Result	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.9**	**5.5**	**----**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**4.0**	**4.2**	**----**	**----**	**----**
Reaction Rate	----	1	-	**2**	**1**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

ALS Environmental

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: **EM1709733**	Page	: 1 of 14
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN		
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Date Received	: 24-Jul-2017 14:30
Order number	: 60506004.1.1	Date Analysed	: 25-Jul-2017
C-O-C number	: ----	Date Issued	: 28-Jul-2017 15:41
No. of samples received	: 37		
No. of samples analysed	: 37	Quote number	: ME/235/17

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Summary of Thresholds Reached or Exceeded

Results for all samples detailed in this report are below the upper threshold limits for Fill Material.

Analytical Results

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1.5	DUP5_240717	ID18CASS13_0.1
			Sampling date/time			24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017
						EM1709733-001	EM1709733-002	EM1709733-004	EM1709733-032	EM1709733-033
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**4.9**	**4.1**	**4.4**	**4.4**	**5.5**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	<5	<5	<5
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	20000	**48**	<5	<5	<5	**80**
Lead	EG005T	5	mg/kg	----	6000	**96**	**5**	<5	<5	**174**
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	12000	**3**	<2	<2	<2	**8**
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	<2	<2
Zinc	EG005T	5	mg/kg	----	140000	**38**	<5	<5	<5	**65**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	<40	<40	<40	<40	<40
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1.5	DUP5_240717	ID18CASS13_0.1
				Sampling date/time			24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017
Compound	*Method*	*LOR*	*Unit*				EM1709733-001	EM1709733-002	EM1709733-004	EM1709733-032	EM1709733-033
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	400	<0.5	<0.5	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	16	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	50	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	2600	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	40000	<50	<50	<50	<50	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1.5	DUP5_240717	ID18CASS13_0.1
						Sampling date/time: 24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017
						EM1709733-001	EM1709733-002	EM1709733-004	EM1709733-032	EM1709733-033
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**4.9**	**4.1**	**4.4**	**4.4**	**5.5**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	<5
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	5000	**48**	<5	<5	<5	**80**
Lead	EG005T	5	mg/kg	----	1500	**96**	**5**	<5	<5	**174**
Molybdenum	EG005T	2	mg/kg	----	1000	<2	<2	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	3000	**3**	<2	<2	<2	**8**
Selenium	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	180	<2	<2	<2	<2	<2
Tin	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	<5
Zinc	EG005T	5	mg/kg	----	35000	**38**	<5	<5	<5	**65**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	<1
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	10000	<40	<40	<40	<40	<40
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1.5	DUP5_240717	ID18CASS13_0.1
				Sampling date/time			24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017
Compound	*Method*	*LOR*	*Unit*				EM1709733-001	EM1709733-002	EM1709733-004	EM1709733-032	EM1709733-033
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	100	<0.5	<0.5	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	<0.05	<0.05	<0.05	<0.05
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	4	<0.03	<0.03	<0.03	<0.03	<0.03
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	650	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	10000	<50	<50	<50	<50	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

				Client sample ID		ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1.5	DUP5_240717	ID18CASS13_0.1
				Sampling date/time	Guideline Lower Limit	Guideline Upper Limit	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017
Compound	*Method*	*LOR*	*Unit*				EM1709733-001	EM1709733-002	EM1709733-004	EM1709733-032	EM1709733-033
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**4.9**	**4.1**	**4.4**	**4.4**	**5.5**
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	<5	<5	<5
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	<1	<1
Copper	EG005T	5	mg/kg	----	100	**48**	<5	<5	<5	**80**
Lead	EG005T	5	mg/kg	----	300	**96**	**5**	<5	<5	**174**
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	<2	<2
Nickel	EG005T	2	mg/kg	----	60	**3**	<2	<2	<2	**8**
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	<5	<5
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	<2	<2
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5
Zinc	EG005T	5	mg/kg	----	200	**38**	<5	<5	<5	**65**
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	<1
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg	----	450	<40	<40	<40	<40	<40
EP066: Polychlorinated Biphenyls (PCB)											
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	<0.2
EP074I: Volatile Halogenated Compounds											
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	<0.5

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS12_0.1	ID18CASS12_0.5	ID18CASS12_1.5	DUP5_240717	ID18CASS13_0.1
				Sampling date/time			24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017	24-Jul-2017
Compound	*Method*	*LOR*	*Unit*				EM1709733-001	EM1709733-002	EM1709733-004	EM1709733-032	EM1709733-033
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	20	<0.5	<0.5	<0.5	<0.5	<0.5
EP075I: Organochlorine Pesticides											
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	1	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	100	<10	<10	<10	<10	<10
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	1000	<50	<50	<50	<50	<50

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID18CASS13_0.3**	**ID18CASS13_0.5**	**----**	**----**	**----**
						Sampling date/time 24-Jul-2017	24-Jul-2017	----	----	----
						EM1709733-034	**EM1709733-035**	--------	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	**5.8**	**5.6**	**----**	**----**	**----**
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	2000	<5	<5	**----**	**----**	**----**
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	**----**	**----**	**----**
Copper	EG005T	5	mg/kg	----	20000	**28**	**8**	**----**	**----**	**----**
Lead	EG005T	5	mg/kg	----	6000	**35**	**5**	**----**	**----**	**----**
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	**----**	**----**	**----**
Nickel	EG005T	2	mg/kg	----	12000	**8**	<2	**----**	**----**	**----**
Selenium	EG005T	5	mg/kg	----	200	<5	<5	**----**	**----**	**----**
Silver	EG005T	2	mg/kg	----	720	<2	<2	**----**	**----**	**----**
Zinc	EG005T	5	mg/kg	----	140000	**22**	**5**	**----**	**----**	**----**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	**----**	**----**	**----**
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	**----**	**----**	**----**
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	**----**	**----**	**----**
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	40000	**70**	<40	**----**	**----**	**----**
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	**----**	**----**	**----**
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	**----**	**----**	**----**
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	**----**	**----**	**----**
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	**----**	**----**	**----**
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	**----**	**----**	**----**
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	**----**	**----**	**----**
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	**----**	**----**	**----**
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	**0.9**	<0.5	**----**	**----**	**----**
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	**5.1**	<0.5	**----**	**----**	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* **ID18CASS13_0.3**	**ID18CASS13_0.5**	**----**	**----**	**----**
						Sampling date/time 24-Jul-2017	24-Jul-2017	----	----	----
						EM1709733-034	**EM1709733-035**	--------	--------	--------
EP075I: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	**----**	**----**	**----**
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	**----**	**----**	**----**
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	**----**	**----**	**----**
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	**----**	**----**	**----**
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	**----**	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	<50	**----**	**----**	**----**

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Client sample ID: ID18CASS13_0.3	Client sample ID: ID18CASS13_0.5	Client sample ID: ----	Client sample ID: ----	Client sample ID: ----
						Sampling date/time: 24-Jul-2017	24-Jul-2017	----	----	----
						EM1709733-034	EM1709733-035	--------	--------	--------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.8**	**5.6**	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	500	<5	<5	----	----	----
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	----	----	----
Copper	EG005T	5	mg/kg	----	5000	**28**	**8**	----	----	----
Lead	EG005T	5	mg/kg	----	1500	**35**	**5**	----	----	----
Molybdenum	EG005T	2	mg/kg	----	1000	<2	<2	----	----	----
Nickel	EG005T	2	mg/kg	----	3000	**8**	<2	----	----	----
Selenium	EG005T	5	mg/kg	----	50	<5	<5	----	----	----
Silver	EG005T	2	mg/kg	----	180	<2	<2	----	----	----
Tin	EG005T	5	mg/kg	----	500	<5	<5	----	----	----
Zinc	EG005T	5	mg/kg	----	35000	**22**	**5**	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	10000	**70**	<40	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	----	----	----
EP074I: Volatile Halogenated Compounds										
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	----	----	----
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	----	----	----
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	**0.9**	<0.5	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS13_0.3	ID18CASS13_0.5	----	----	----
				Sampling date/time			24-Jul-2017	24-Jul-2017	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709733-034	EM1709733-035	--------	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100		**5.1**	<0.5	----	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2		<0.03	<0.03	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2		<0.03	<0.03	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50		<0.05	<0.05	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4		<0.03	<0.03	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10		<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650		<10	<10	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000		<50	<50	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Client sample ID* / *Sampling date/time*				
						ID18CASS13_0.3 / 24-Jul-2017 / **EM1709733-034**	**ID18CASS13_0.5** / 24-Jul-2017 / **EM1709733-035**	---- / ---- / --------	---- / ---- / --------	---- / ---- / --------
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)	EA001	0.1	pH Unit	4	9	**5.8**	**5.6**	----	----	----
EG005T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	<5	<5	----	----	----
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	----	----	----
Copper	EG005T	5	mg/kg	----	100	**28**	**8**	----	----	----
Lead	EG005T	5	mg/kg	----	300	**35**	**5**	----	----	----
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	----	----	----
Nickel	EG005T	2	mg/kg	----	60	**8**	<2	----	----	----
Selenium	EG005T	5	mg/kg	----	10	<5	<5	----	----	----
Silver	EG005T	2	mg/kg	----	10	<2	<2	----	----	----
Tin	EG005T	5	mg/kg	----	50	<5	<5	----	----	----
Zinc	EG005T	5	mg/kg	----	200	**22**	**5**	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	----	----	----
EK040T: Fluoride Total										
Fluoride	EK040T	40	mg/kg	----	450	**70**	<40	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons										
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	----	----	----
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	----	----	----
EP074I: Volatile Halogenated Compounds										
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)										
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)										
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	**0.9**	<0.5	----	----	----

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: **SOIL**

				Client sample ID	Guideline Lower Limit	Guideline Upper Limit	ID18CASS13_0.3	ID18CASS13_0.5	----	----	----
				Sampling date/time			24-Jul-2017	24-Jul-2017	----	----	----
Compound	*Method*	*LOR*	*Unit*				EM1709733-034	EM1709733-035	--------	--------	--------
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	**5.1**	<0.5	**----**	**----**	**----**
EP075I: Organochlorine Pesticides											
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	**----**	**----**	**----**
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	<50	**----**	**----**	**----**

Note: Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709733**	Page	: 1 of 13
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 24-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017
Sampler	: APW		
Site	: Edithvale LX Removal		
Quote number	: ME/235/17		
No. of samples received	: 37		
No. of samples analysed	: 37		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1017391)									
EM1709731-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.7	7.7	0.00	0% - 20%
EM1709752-006	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.9	1.27	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1015794)									
EM1709731-001	Anonymous	EA055: Moisture Content	----	1	%	17.7	17.6	1.08	0% - 50%
EM1709736-002	Anonymous	EA055: Moisture Content	----	1	%	3.5	3.9	10.8	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1017739)									
EM1709733-001	ID18CASS12_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	4	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	48	46	3.75	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	96	90	7.30	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	38	36	6.12	No Limit
EM1709738-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	6	103	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	9	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	225	191	16.4	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	146	145	0.788	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1017739) - continued									
EM1709738-001	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	11	10	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	631	713	12.1	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1017738)									
EM1709733-001	ID18CASS12_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709738-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.2	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1017223)									
EM1709733-001	ID18CASS12_0.1	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709734-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1017538)									
EM1709733-002	ID18CASS12_0.5	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1709589-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1015586)									
EM1709733-001	ID18CASS12_0.1	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	<40	0.00	No Limit
EM1709752-008	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	350	360	4.21	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1015644)									
EM1709733-001	ID18CASS12_0.1	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1709756-014	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1015637)									
EM1709733-001	ID18CASS12_0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709756-014	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1015637)									
EM1709733-001	ID18CASS12_0.1	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1709756-014	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1015637)									
EM1709733-001	ID18CASS12_0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 1015637) - continued									
EM1709733-001	ID18CASS12_0.1	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1709756-014	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1015642)									
EM1709733-001	ID18CASS12_0.1	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1015642) - continued									
EM1709733-001	ID18CASS12_0.1	EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1709756-014	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1015642)									
EM1709733-001	ID18CASS12_0.1	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1709756-014	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1015642)									
EM1709733-001	ID18CASS12_0.1	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1015642) - continued									
EM1709733-001	ID18CASS12_0.1	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1709756-014	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1015642)									
EM1709733-001	ID18CASS12_0.1	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075I: Organochlorine Pesticides (QC Lot: 1015642) - continued									
EM1709733-001	ID18CASS12_0.1	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1709756-014	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1015637)									
EM1709733-001	ID18CASS12_0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1709756-014	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1015643)									
EM1709733-001	ID18CASS12_0.1	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709756-014	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1015643) - continued									
EM1709756-014	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1015637)									
EM1709733-001	ID18CASS12_0.1	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1709756-014	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1015643)									
EM1709733-001	ID18CASS12_0.1	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1709756-014	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1017739)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	86.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.2	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	92.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.0	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	91.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	93.9	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1017738)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1017223)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	86.8	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1017538)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.4	80	110
EK040T: Fluoride Total (QCLot: 1015586)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	105	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1015644)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	90.3	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1015637)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	102	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	100	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	97.5	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	97.2	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	101	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	98.7	70	116
EP074H: Naphthalene (QCLot: 1015637)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	97.7	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1015637)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	98.5	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	98.3	62	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1015637) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	108	65	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	102	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	104	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	106	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	105	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	97.2	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	108	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	58	120
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	111	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	116	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	75.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.9	70	122
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.6	61	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	96.8	67	117
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	83.4	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1015642)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	109	43	119
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	91.0	44	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	104	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	111	50	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	103	44	128
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	100	44	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	75.9	46	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	82.1	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	67.3	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1015642)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	102	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	87.1	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	85.4	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	91.0	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	96.9	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	108	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	105	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	120	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	119	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	115	12	132

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1015642)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	95.3	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	102	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.3	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	106	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	124	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	115	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	112	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	114	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	115	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	111	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	111	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	102	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	109	55	137
EP075I: Organochlorine Pesticides (QCLot: 1015642)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	128	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	98.6	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	123	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	126	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	131	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	110	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	109	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	95.2	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	93.6	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	92.4	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	112	53	133
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	115	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	130	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	90.0	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	131	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	129	56	138
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	116	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	130	51	133
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	129	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	131	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1015637)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	99.5	69	114

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1015643)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	837 mg/kg	88.4	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3061 mg/kg	87.5	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1592 mg/kg	86.2	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1015637)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	98.0	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1015643)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1222 mg/kg	86.7	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3919 mg/kg	87.6	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	316 mg/kg	85.5	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1017739)							
EM1709733-002	ID18CASS12_0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	102	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	104	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	98.3	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	100	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	94.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	100	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1017738)							
EM1709733-002	ID18CASS12_0.5	EG035T: Mercury	7439-97-6	5 mg/kg	88.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1017223)							
EM1709733-002	ID18CASS12_0.5	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	88.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1017538)							
EM1709589-003	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	100	77	113
EK040T: Fluoride Total (QCLot: 1015586)							
EM1709733-002	ID18CASS12_0.5	EK040T: Fluoride	16984-48-8	400 mg/kg	93.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1015644)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1015644) - continued							
EM1709733-032	DUP5_240717	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	82.7	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1015637)							
EM1709733-002	ID18CASS12_0.5	EP074-UT: Benzene	71-43-2	2 mg/kg	105	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	94.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1015637)							
EM1709733-002	ID18CASS12_0.5	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	108	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	96.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	98.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1015642)							
EM1709733-002	ID18CASS12_0.5	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	84.0	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	64.4	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	62.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1015642)							
EM1709733-002	ID18CASS12_0.5	EP075-EM: Phenol	108-95-2	1 mg/kg	68.3	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	65.8	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1015642)							
EM1709733-002	ID18CASS12_0.5	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	83.1	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	93.4	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1015637)							
EM1709733-002	ID18CASS12_0.5	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	81.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1015643)							
EM1709733-004	ID18CASS12_1.5	EP071-EM: C10 - C14 Fraction	----	837 mg/kg	94.6	53	123
		EP071-EM: C15 - C28 Fraction	----	3061 mg/kg	92.4	70	124
		EP071-EM: C29 - C36 Fraction	----	1592 mg/kg	91.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1015637)							
EM1709733-002	ID18CASS12_0.5	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	78.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1015643)							
EM1709733-004	ID18CASS12_1.5	EP071-EM: >C10 - C16 Fraction	----	1222 mg/kg	92.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3919 mg/kg	92.6	67	121
		EP071-EM: >C34 - C40 Fraction	----	316 mg/kg	91.2	44	126

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709733**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 24-Jul-2017
Site	: Edithvale LX Removal	Issue Date	: 28-Jul-2017
Sampler	: APW	No. of samples received	: 37
Order number	: 60506004.1.1	No. of samples analysed	: 37

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	31-Jul-2017	✓	**26-Jul-2017**	26-Jul-2017	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1, ID18CASS12_1.5, ID18CASS12_2, ID18CASS12_2.5, ID18CASS12_3, ID18CASS12_3.5, ID18CASS12_4, ID18CASS12_4.5, ID18CASS12_5, ID18CASS12_5.5, ID18CASS12_6, ID18CASS12_6.5, ID18CASS12_7, ID18CASS12_7.5, ID18CASS12_8, ID18CASS12_8.5, ID18CASS12_9, ID18CASS12_9.5, ID18CASS12_10, ID18CASS12_10.5, ID18CASS12_11, ID18CASS12_11.5, ID18CASS12_12, ID18CASS12_12.5, ID18CASS12_13, ID18CASS12_13.5, ID18CASS12_14, DUP1_240717, DUP3_240717, ID18CASS13_0.1, ID18CASS13_0.5, ID18CASS13_1, ID18CASS13_1.5	**24-Jul-2017**	**25-Jul-2017**	20-Jan-2018	✓	**25-Jul-2017**	20-Jan-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**----**	----	----	**25-Jul-2017**	07-Aug-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	20-Jan-2018	✓	**27-Jul-2017**	20-Jan-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	21-Aug-2017	✓	**27-Jul-2017**	21-Aug-2017	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	21-Aug-2017	✓	**26-Jul-2017**	02-Aug-2017	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**27-Jul-2017**	09-Aug-2017	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	21-Aug-2017	✓	**27-Jul-2017**	21-Aug-2017	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**25-Jul-2017**	31-Jul-2017	✓	**27-Jul-2017**	31-Jul-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**25-Jul-2017**	31-Jul-2017	✓	**27-Jul-2017**	31-Jul-2017	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**25-Jul-2017**	31-Jul-2017	✓	**27-Jul-2017**	31-Jul-2017	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**25-Jul-2017**	31-Jul-2017	✓	**27-Jul-2017**	31-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP071-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**25-Jul-2017**	31-Jul-2017	✓	**27-Jul-2017**	31-Jul-2017	✓
Soil Glass Jar - Unpreserved (EP071-EM)							
ID18CASS12_0.1, ID18CASS12_0.5, ID18CASS12_1.5, DUP5_240717, ID18CASS13_0.1, ID18CASS13_0.3, ID18CASS13_0.5	**24-Jul-2017**	**26-Jul-2017**	07-Aug-2017	✓	**26-Jul-2017**	04-Sep-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709733**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX Removal		
Sampler	: APW		

Dates

Date Samples Received	: 24-Jul-2017 14:30	Issue Date	: 25-Jul-2017
Client Requested Due Date	: 31-Jul-2017	Scheduled Reporting Date	: **31-Jul-2017**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 5.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 37 / 37

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 WRG 621
EM1709733-001	24-Jul-2017 00:00	ID18CASS12_0.1	✓	✓	✓
EM1709733-002	24-Jul-2017 00:00	ID18CASS12_0.5	✓	✓	✓
EM1709733-003	24-Jul-2017 00:00	ID18CASS12_1	✓		
EM1709733-004	24-Jul-2017 00:00	ID18CASS12_1.5	✓	✓	✓
EM1709733-005	24-Jul-2017 00:00	ID18CASS12_2	✓		
EM1709733-006	24-Jul-2017 00:00	ID18CASS12_2.5	✓		
EM1709733-007	24-Jul-2017 00:00	ID18CASS12_3	✓		
EM1709733-008	24-Jul-2017 00:00	ID18CASS12_3.5	✓		
EM1709733-009	24-Jul-2017 00:00	ID18CASS12_4	✓		
EM1709733-010	24-Jul-2017 00:00	ID18CASS12_4.5	✓		
EM1709733-011	24-Jul-2017 00:00	ID18CASS12_5	✓		
EM1709733-012	24-Jul-2017 00:00	ID18CASS12_5.5	✓		
EM1709733-013	24-Jul-2017 00:00	ID18CASS12_6	✓		
EM1709733-014	24-Jul-2017 00:00	ID18CASS12_6.5	✓		
EM1709733-015	24-Jul-2017 00:00	ID18CASS12_7	✓		
EM1709733-016	24-Jul-2017 00:00	ID18CASS12_7.5	✓		
EM1709733-017	24-Jul-2017 00:00	ID18CASS12_8	✓		
EM1709733-018	24-Jul-2017 00:00	ID18CASS12_8.5	✓		
EM1709733-019	24-Jul-2017 00:00	ID18CASS12_9	✓		
EM1709733-020	24-Jul-2017 00:00	ID18CASS12_9.5	✓		
EM1709733-021	24-Jul-2017 00:00	ID18CASS12_10	✓		
EM1709733-022	24-Jul-2017 00:00	ID18CASS12_10.5	✓		
EM1709733-023	24-Jul-2017 00:00	ID18CASS12_11	✓		
EM1709733-024	24-Jul-2017 00:00	ID18CASS12_11.5	✓		
EM1709733-025	24-Jul-2017 00:00	ID18CASS12_12	✓		
EM1709733-026	24-Jul-2017 00:00	ID18CASS12_12.5	✓		
EM1709733-027	24-Jul-2017 00:00	ID18CASS12_13	✓		
EM1709733-028	24-Jul-2017 00:00	ID18CASS12_13.5	✓		
EM1709733-029	24-Jul-2017 00:00	ID18CASS12_14	✓		
EM1709733-030	24-Jul-2017 00:00	DUP1_240717	✓		
EM1709733-031	24-Jul-2017 00:00	DUP3_240717	✓		
EM1709733-032	24-Jul-2017 00:00	DUP5_240717		✓	✓
EM1709733-033	24-Jul-2017 00:00	ID18CASS13_0.1	✓	✓	✓
EM1709733-034	24-Jul-2017 00:00	ID18CASS13_0.3		✓	✓
EM1709733-035	24-Jul-2017 00:00	ID18CASS13_0.5	✓	✓	✓

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1709733-036	24-Jul-2017 00:00	ID18CASS13_1	✓		
EM1709733-037	24-Jul-2017 00:00	ID18CASS13_1.5	✓		

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: Standard

Quote # / GHD Reference:

Job Number: 3134145	GHD Contact: A. Wilson
Project: Edithvale LX removal	
GHD Project Manager: J. Hixon	GHD Contact: A. Wilson
GHD PM email:	GHD Contact email:

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, the **laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil, SL: Sludge W: Water A: Air GW: Groundwater	Container Type V: vial G: glassbottle P: plastic bottle J: soil jar B: bag	Container Number	Container Volume (mL)	Analyses Required: ASS field screen	Analyses Required: HWC 6Q1	SAMPLE COMMENTS
1	IDISCASS12_0-1	24/7/17	Am		S	BJ			✓	✓	
2	-0.5					-"-			✓	✓	Please on-send QA package to Eurofins.
3	-1					B			✓		
4	1.5					BJ			✓	✓	
5	2					B			✓		
6	2.5								✓		
7	3								✓		
8	3.5								✓		
9	4								✓		
10	4.5								✓		
11	5								✓		
12	5.5								✓		
13	6								✓		
14	6.5								✓		
15	7								✓		
16	7.5								✓		
17	8								✓		

Forwarded to Secondary Lab
Initials: AM Date: 25/7

Environmental Division
Melbourne
Work Order Reference
EM1709733

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:
TOTAL NUMBER OF ESKIES:
SAMPLES/ESKY CHILLED? Y/N
GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER ADW	ADW 24/07/17		
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Scott (ALS)	24/7/17, 14.30	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix: S-Soil, ST-Sludge, W-Water, A-Air, GW-Groundwater	Container Type: P-Plastic, V-Vial, G-glass, Jar-soil jar, B-Bag	Container Number	Container Volume (mL)	Analyses Required: Asbestos ID screen	Asbestos ID 500g 621	SAMPLE COMMENTS
18	IDISCASS12 – 8.5	24/7/17	Am		S	B			✓		
19	9								✓		
20	9.5								✓		
21	10								✓		
22	10.5								✓		
23	11								✓		
24	11.5								✓		
25	12								✓		
26	12.5								✓		
27	13								✓		
28	13.5								✓		
29	14								✓		
30	DUP 1 – 240717								✓		
31	DUP 3 – 240717								✓		
32	DUP 5 – 240717	Am 25/7				J				✓	
33	IDISCASS13 – 0.1					B/J			✓	✓	
34	– 0.3					J				✓	

TOTAL NUMBER OF SAMPLES:		GENERAL COMMENTS:
TOTAL NUMBER OF ESKIES:		
SAMPLES/ESKY CHILLED? Y/N		

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Scott (MS)	24/7/17, 14.30	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D	Date	Time	Composite Samples	Sample Matrix: S. Soil, Sl. Sludge W. Water A. Air GW. Groundwater	Container: Type: B. Bag J. Soil Jar W. Wat. G. glass bottle P. plastic bottle	Number	Volume (mL)	Analyses Required: ASS field screen	1:2 Rio 624	SAMPLE COMMENTS
35	1DISCASS13 -0.5	24/7/17	Am		S	BJ			✓	✓	
36	-1	〃	〃		〃	〃			✓		
37	-1.5	〃	〃		〃	〃			✓		

TOTAL NUMBER OF SAMPLES:	
TOTAL NUMBER OF ESKIES:	
SAMPLES/ESKY CHILLED? Y / N	

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Scott (ALS)	24/7/17, 14.30	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709754**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 12-Jul-2017 09:20
Order number	: 60506004.1.1	Date Analysis Commenced	: 31-Jul-2017
C-O-C number	: ----	Issue Date	: 31-Jul-2017 16:32
Sampler	: ----		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 13		
No. of samples analysed	: 13		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA029 (SPOCAS): Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA029 (SPOCAS): Excess ANC not required because pH OX less than 6.5.
- This is a rebatch of EM1709078 and EM1709324.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from kg/t dry weight to kg/m3 in-situ soil, multiply reported results x wet bulk density of soil in t/m3.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46 CASS11_3	ID46 CASS11_7	ID46 CASS11_9.5	ID46 CASS11_10.5	ID46 CASS11_12
			Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709754-001	EM1709754-002	EM1709754-003	EM1709754-004	EM1709754-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.9**	**9.7**	**8.3**	**8.6**	**7.5**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**8**	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	**0.392**	**0.476**	**0.036**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	**245**	**297**	**22**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**----**	**2.49**	**1.31**	**2.58**	**0.49**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**----**	**498**	**262**	**516**	**98**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**----**	**0.80**	**0.42**	**0.83**	**0.16**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	**0.11**	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	**70**	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	**5**	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	**0.39**	**0.48**	**0.04**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	**245**	**297**	**22**
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	**18**	**22**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46 CASS11_14	ID46 CASS11_15.5	ID46 CASS11_16.5	ID46-CASS03_0.1	ID46-CASS03_3.0
			Client sampling date / time	17-Jul-2017 00:00	17-Jul-2017 00:00	17-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709754-006	EM1709754-007	EM1709754-008	EM1709754-009	EM1709754-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**6.6**	**6.3**	**6.2**	**5.7**	**5.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	**20**	**5**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	**0.03**	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.009**	**0.006**	**0.025**	**0.013**	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	**16**	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.40**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**81**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.13**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	**0.02**	**0.04**	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	**16**	**28**	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	**1**	**2**	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	**0.02**	**0.04**	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	**16**	**28**	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	**1**	**2**	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46-CASS03_5.5	ID46-CASS03_7.0	QC1_170717	----	----
			Client sampling date / time	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1709754-011	EM1709754-012	EM1709754-013	--------	--------
				Result	Result	Result	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	**6.4**	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	**6.2**	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	<2	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	**11**	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	**11**	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	----	<0.020	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	----	<0.020	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	----	<0.020	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	----	<0.020	----	----
Peroxide Sulfur (23De)	----	0.020	% S	----	----	**0.030**	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	----	**0.030**	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	**18**	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	----	**0.075**	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	----	**0.076**	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	----	<0.020	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	<10	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	----	<0.020	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	----	**0.047**	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	----	**0.048**	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	----	<0.020	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	<10	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	----	<0.020	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	**0.03**	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	**18**	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	**1**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46-CASS03_5.5	ID46-CASS03_7.0	QC1_170717	----	----
				Client sampling date / time	11-Jul-2017 00:00	11-Jul-2017 00:00	11-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1709754-011	EM1709754-012	EM1709754-013	--------	--------
					Result	Result	Result	----	----
EA029-H: Acid Base Accounting - Continued									
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		**----**	**----**	**0.03**	**----**	**----**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		**----**	**----**	**18**	**----**	**----**
Liming Rate excluding ANC	----	1	kg CaCO3/t		**----**	**----**	**1**	**----**	**----**
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		**5.9**	**9.3**	**----**	**----**	**----**
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	**----**	**----**	**----**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	**----**	**----**	**----**
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		**0.022**	**0.036**	**----**	**----**	**----**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		**14**	**22**	**----**	**----**	**----**
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		**----**	**0.32**	**----**	**----**	**----**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		**----**	**64**	**----**	**----**	**----**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		**----**	**0.10**	**----**	**----**	**----**
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		**1.5**	**1.5**	**----**	**----**	**----**
Net Acidity (sulfur units)	----	0.02	% S		**0.02**	<0.02	**----**	**----**	**----**
Net Acidity (acidity units)	----	10	mole H+ / t		**14**	<10	**----**	**----**	**----**
Liming Rate	----	1	kg CaCO3/t		**1**	<1	**----**	**----**	**----**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		**0.02**	**0.04**	**----**	**----**	**----**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		**14**	**22**	**----**	**----**	**----**
Liming Rate excluding ANC	----	1	kg CaCO3/t		**1**	**2**	**----**	**----**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709754**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 12-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 31-Jul-2017
C-O-C number	: ----	Issue Date	: 31-Jul-2017
Sampler	: ----		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 13		
No. of samples analysed	: 13		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA029-A: pH Measurements (QC Lot: 1022971)									
EB1715183-001	Anonymous	EA029: pH KCl (23A)	----	0.1	pH Unit	8.4	8.4	0.00	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	7.6	7.6	0.00	0% - 20%
EB1715237-008	Anonymous	EA029: pH KCl (23A)	----	0.1	pH Unit	6.6	6.6	0.00	0% - 20%
		EA029: pH OX (23B)	----	0.1	pH Unit	6.0	6.0	0.00	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1022971)									
EB1715183-001	Anonymous	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EB1715237-008	Anonymous	EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	<0.020	0.00	No Limit
		EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	0.00	No Limit
EA029-C: Sulfur Trail (QC Lot: 1022971)									
EB1715183-001	Anonymous	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	<0.020	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA029-C: Sulfur Trail (QC Lot: 1022971) - continued									
EB1715183-001	Anonymous	EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1715237-008	Anonymous	EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.045	0.047	4.80	No Limit
		EA029: Peroxide Sulfur (23De)	----	0.02	% S	0.062	0.066	5.05	No Limit
		EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	11	12	0.00	No Limit
EA029-D: Calcium Values (QC Lot: 1022971)									
EB1715183-001	Anonymous	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.342	0.338	1.21	0% - 50%
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.646	0.704	8.55	0% - 20%
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	0.304	0.366	18.4	0% - 50%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	0.244	0.293	18.4	0% - 50%
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	152	183	18.4	0% - 50%
EB1715237-008	Anonymous	EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.037	0.039	5.77	No Limit
		EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	0.044	0.041	6.85	No Limit
		EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	<0.020	0.00	No Limit
		EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EA029-E: Magnesium Values (QC Lot: 1022971)									
EB1715183-001	Anonymous	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	<0.020	0.00	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.039	0.039	0.00	No Limit
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.039	0.039	0.00	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.051	0.052	0.00	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	32	32	0.00	No Limit
EB1715237-008	Anonymous	EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.086	0.090	5.23	No Limit
		EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.102	0.110	7.67	No Limit
		EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	<0.020	0.00	No Limit
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.021	0.026	19.9	No Limit
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	13	16	19.9	No Limit
EA029-H: Acid Base Accounting (QC Lot: 1022971)									
EB1715183-001	Anonymous	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA029-H: Acid Base Accounting (QC Lot: 1022971) - continued									
EB1715183-001	Anonymous	EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1715237-008	Anonymous	EA029: ANC Fineness Factor	----	0.5	-	1.5	1.5	0.00	No Limit
		EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA029: Liming Rate	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	<1	0.00	No Limit
		EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	0.00	No Limit
		EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	11	12	0.00	No Limit
EA033-A: Actual Acidity (QC Lot: 1022970)									
EB1715146-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
EM1709712-007	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.5	8.6	1.17	0% - 20%
EA033-A: Actual Acidity (QC Lot: 1022972)									
EM1709754-005	ID46 CASS11_12	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	7.5	7.1	5.48	0% - 20%
EM1709757-003	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	8	8	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.3	5.4	1.87	0% - 20%
EA033-B: Potential Acidity (QC Lot: 1022970)									
EB1715146-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.010	0.009	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EM1709712-007	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EA033-B: Potential Acidity (QC Lot: 1022972)									
EM1709754-005	ID46 CASS11_12	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.036	0.036	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	22	22	0.00	No Limit
EM1709757-003	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.086	0.084	1.94	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	54	53	1.94	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 1022970)									
EB1715146-001	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.40	0.44	9.41	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.13	0.14	9.41	0% - 50%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-C: Acid Neutralising Capacity (QC Lot: 1022970) - continued									
EB1715146-001	Anonymous	EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	80	88	9.41	No Limit
EM1709712-007	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.04	5.99	0.820	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.93	1.92	0.820	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1210	1200	0.820	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 1022972)									
EM1709754-005	ID46 CASS11_12	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.49	0.45	7.33	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.16	0.14	7.33	0% - 50%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	98	91	7.33	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA029-A: pH Measurements (QCLot: 1022971)								
EA029: pH KCl (23A)	----	0.1	pH Unit	<0.1	4.2 pH Unit	100	70	130
EA029: pH OX (23B)	----	0.1	pH Unit	<0.1	3.4 pH Unit	94.1	70	130
EA029-B: Acidity Trail (QCLot: 1022971)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	106	70	130
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	170 mole H+ / t	94.3	70	130
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.020	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1022971)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.020	0.052 % S	93.8	70	130
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.020	0.158 % S	96.8	70	130
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.020	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1022971)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.020	0.097 % Ca	101	70	130
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.020	0.22 % Ca	98.9	70	130
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.020	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.020	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1022971)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.020	0.25 % Mg	107	70	130
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.020	0.234 % Mg	96.9	70	130
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.020	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.020	----	----	----	----
EA029-H: Acid Base Accounting (QCLot: 1022971)								
EA029: ANC Fineness Factor	----	0.5	-	<0.5	----	----	----	----
EA029: Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA029: Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
EA029: Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
EA029: Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 1022970)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.2 pH Unit	100	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	106	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 1022972)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.2 pH Unit	100	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	106	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1022970)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.25483 % S	92.7	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1022972)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.25483 % S	93.5	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 1022970)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	96.4	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 1022972)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	94.5	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709754**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 12-Jul-2017
Site	: Bonbeach LX	Issue Date	: 31-Jul-2017
Sampler	: ----	No. of samples received	: 13
Order number	: 60506004.1.1	No. of samples analysed	: 13

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-B: Acidity Trail							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-C: Sulfur Trail							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-D: Calcium Values							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-E: Magnesium Values							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-F: Excess Acid Neutralising Capacity							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-G: Retained Acidity							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓
EA029-H: Acid Base Accounting							
80* dried soil (EA029) QC1_170717	**11-Jul-2017**	**31-Jul-2017**	05-Apr-2020	✓	**31-Jul-2017**	29-Oct-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
80* dried soil (EA033)							
ID46-CASS03_0.1, ID46-CASS03_3.0, ID46-CASS03_5.5, ID46-CASS03_7.0	**11-Jul-2017**	**31-Jul-2017**	11-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033)							
ID46 CASS11_3, ID46 CASS11_7, ID46 CASS11_9.5, ID46 CASS11_10.5, ID46 CASS11_12, ID46 CASS11_14, ID46 CASS11_15.5, ID46 CASS11_16.5	**17-Jul-2017**	**31-Jul-2017**	17-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
EA033-B: Potential Acidity							
80* dried soil (EA033)							
ID46-CASS03_0.1, ID46-CASS03_3.0, ID46-CASS03_5.5, ID46-CASS03_7.0	**11-Jul-2017**	**31-Jul-2017**	11-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033)							
ID46 CASS11_3, ID46 CASS11_7, ID46 CASS11_9.5, ID46 CASS11_10.5, ID46 CASS11_12, ID46 CASS11_14, ID46 CASS11_15.5, ID46 CASS11_16.5	**17-Jul-2017**	**31-Jul-2017**	17-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
EA033-C: Acid Neutralising Capacity							
80* dried soil (EA033)							
ID46-CASS03_0.1, ID46-CASS03_3.0, ID46-CASS03_5.5, ID46-CASS03_7.0	**11-Jul-2017**	**31-Jul-2017**	11-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033)							
ID46 CASS11_3, ID46 CASS11_7, ID46 CASS11_9.5, ID46 CASS11_10.5, ID46 CASS11_12, ID46 CASS11_14, ID46 CASS11_15.5, ID46 CASS11_16.5	**17-Jul-2017**	**31-Jul-2017**	17-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
EA033-D: Retained Acidity							
80* dried soil (EA033)							
ID46-CASS03_0.1, ID46-CASS03_3.0, ID46-CASS03_5.5, ID46-CASS03_7.0	**11-Jul-2017**	**31-Jul-2017**	11-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033)							
ID46 CASS11_3, ID46 CASS11_7, ID46 CASS11_9.5, ID46 CASS11_10.5, ID46 CASS11_12, ID46 CASS11_14, ID46 CASS11_15.5, ID46 CASS11_16.5	**17-Jul-2017**	**31-Jul-2017**	17-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
80* dried soil (EA033)							
ID46-CASS03_0.1, ID46-CASS03_3.0, ID46-CASS03_5.5, ID46-CASS03_7.0	**11-Jul-2017**	**31-Jul-2017**	11-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033)							
ID46 CASS11_3, ID46 CASS11_7, ID46 CASS11_9.5, ID46 CASS11_10.5, ID46 CASS11_12, ID46 CASS11_14, ID46 CASS11_15.5, ID46 CASS11_16.5	**17-Jul-2017**	**31-Jul-2017**	17-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709754**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	:		

Dates

Date Samples Received	: 12-Jul-2017 09:20	Issue Date	: 25-Jul-2017
Client Requested Due Date	: 31-Jul-2017	Scheduled Reporting Date	: **31-Jul-2017**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 12 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1709078 and EM1709324.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EM1709754-001	17-Jul-2017 00:00	ID46 CASS11_3	✓
EM1709754-002	17-Jul-2017 00:00	ID46 CASS11_7	✓
EM1709754-003	17-Jul-2017 00:00	ID46 CASS11_9.5	✓
EM1709754-004	17-Jul-2017 00:00	ID46 CASS11_10.5	✓
EM1709754-005	17-Jul-2017 00:00	ID46 CASS11_12	✓
EM1709754-006	17-Jul-2017 00:00	ID46 CASS11_14	✓
EM1709754-007	17-Jul-2017 00:00	ID46 CASS11_15.5	✓
EM1709754-008	17-Jul-2017 00:00	ID46 CASS11_16.5	✓
EM1709754-009	11-Jul-2017 00:00	ID46-CASS03_0.1	✓
EM1709754-010	11-Jul-2017 00:00	ID46-CASS03_3.0	✓
EM1709754-011	11-Jul-2017 00:00	ID46-CASS03_5.5	✓
EM1709754-012	11-Jul-2017 00:00	ID46-CASS03_7.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
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- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

NAVJOT KAUR

- *AU Certificate of Analysis - NATA (COA)	Email	navjot.kaur@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	navjot.kaur@aecom.com
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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709754**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	:		

Dates

Date Samples Received	: 12-Jul-2017 09:20	Issue Date	: 25-Jul-2017
Client Requested Due Date	: 31-Jul-2017	Scheduled Reporting Date	: **31-Jul-2017**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 13 / 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
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- **Analytical work for this work order will be conducted at ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1709078 and EM1709324.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
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EM1709754-002	17-Jul-2017 00:00	ID46 CASS11_7	✓
EM1709754-003	17-Jul-2017 00:00	ID46 CASS11_9.5	✓
EM1709754-004	17-Jul-2017 00:00	ID46 CASS11_10.5	✓
EM1709754-005	17-Jul-2017 00:00	ID46 CASS11_12	✓
EM1709754-006	17-Jul-2017 00:00	ID46 CASS11_14	✓
EM1709754-007	17-Jul-2017 00:00	ID46 CASS11_15.5	✓
EM1709754-008	17-Jul-2017 00:00	ID46 CASS11_16.5	✓
EM1709754-009	11-Jul-2017 00:00	ID46-CASS03_0.1	✓
EM1709754-010	11-Jul-2017 00:00	ID46-CASS03_3.0	✓
EM1709754-011	11-Jul-2017 00:00	ID46-CASS03_5.5	✓
EM1709754-012	11-Jul-2017 00:00	ID46-CASS03_7.0	✓
EM1709754-013	11-Jul-2017 00:00	QC1_170717	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

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- *AU Certificate of Analysis - NATA (COA)	Email	navjot.kaur@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	navjot.kaur@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	navjot.kaur@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	navjot.kaur@aecom.com
- Chain of Custody (CoC) (COC)	Email	navjot.kaur@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	navjot.kaur@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	navjot.kaur@aecom.com

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709754**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	:		

Dates

Date Samples Received	: 12-Jul-2017 09:20	Issue Date	: 26-Jul-2017
Client Requested Due Date	: 31-Jul-2017	Scheduled Reporting Date	: **31-Jul-2017**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 13 / 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1709078 and EM1709324.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA029 SPOCAS	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EM1709754-001	17-Jul-2017 00:00	ID46 CASS11_3		✓
EM1709754-002	17-Jul-2017 00:00	ID46 CASS11_7		✓
EM1709754-003	17-Jul-2017 00:00	ID46 CASS11_9.5		✓
EM1709754-004	17-Jul-2017 00:00	ID46 CASS11_10.5		✓
EM1709754-005	17-Jul-2017 00:00	ID46 CASS11_12		✓
EM1709754-006	17-Jul-2017 00:00	ID46 CASS11_14		✓
EM1709754-007	17-Jul-2017 00:00	ID46 CASS11_15.5		✓
EM1709754-008	17-Jul-2017 00:00	ID46 CASS11_16.5		✓
EM1709754-009	11-Jul-2017 00:00	ID46-CASS03_0.1		✓
EM1709754-010	11-Jul-2017 00:00	ID46-CASS03_3.0		✓
EM1709754-011	11-Jul-2017 00:00	ID46-CASS03_5.5		✓
EM1709754-012	11-Jul-2017 00:00	ID46-CASS03_7.0		✓
EM1709754-013	11-Jul-2017 00:00	QC1_170717	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

NAVJOT KAUR

- *AU Certificate of Analysis - NATA (COA)	Email	navjot.kaur@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	navjot.kaur@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	navjot.kaur@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	navjot.kaur@aecom.com
- Chain of Custody (CoC) (COC)	Email	navjot.kaur@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	navjot.kaur@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	navjot.kaur@aecom.com

Rebatch

Client / Client code: AECGHD
Project: 3134145 - Bonbeach
Project Manger: Warwick Jordan
Date /time sample rec: 12/7 @ 09:20 & 17/7 @ 15:10
Date/time Instructions rec: 24/7 @ 13:25
Due date: Monday, 31 July 2017
Due date surcharge: **STD**

CS Contact: L Burns
Additional Information:

Environmental Division
Melbourne
Work Order Reference
EM1709754

Telephone : + 61-3-8549 9600

New Lab ID	Sample information: Client ID	Sampling Date / Time	Previous Work Order Reference	Previous ALS ID	Tray Number(s)	Container	Number of Containers	Analysis: Standard: CRS Suite	Standard: SPOCAS	Standard	Standard	Standard	Leach	Leach	Leach	Leach	Leach	Shortest Holding time expiry
1	ID46 CASS11_3	17/07/2017	EM1709324	3	EB	BAG		X										13-Jan-18
2	ID46 CASS11_7	17/07/2017	EM1709324	11	EB	BAG		X										13-Jan-18
3	ID46 CASS11_9.5	17/07/2017	EM1709324	16	EB	BAG		X										13-Jan-18
4	ID46 CASS11_10.5	17/07/2017	EM1709324	18	EB	BAG		X										13-Jan-18
5	ID46 CASS11_12	17/07/2017	EM1709324	21	EB	BAG		X										13-Jan-18
6	ID46 CASS11_14	17/07/2017	EM1709324	25	EB	BAG		X										13-Jan-18
7	ID46 CASS11_15.5	17/07/2017	EM1709324	28	EB	BAG		X										13-Jan-18
8	ID46 CASS11_16.5	17/07/2017	EM1709324	30	EB	BAG		X										13-Jan-18
9	ID46-CASS03_0.1	11/07/2017	EM1709078	1	EB	BAG		X										07-Jan-18
10	ID46-CASS03_3.0	11/07/2017	EM1709078	7	EB	BAG		X										07-Jan-18
11	ID46-CASS03_5.5	11/07/2017	EM1709078	12	EB	BAG		X										07-Jan-18
12	ID46-CASS03_7.0	11/07/2017	EM1709078	15	EB	BAG		X										07-Jan-18
13	QC1-170717	17/7/17	EM1709324	34	EB	BAG		~~X~~	X									
						TOTAL	0											

SH 25/7

Melbourne Enviro Services

Subject: FW: Further CRS testing - Edithvale and Bonbeach

From: Kaur, Navjot [mailto:Navjot.Kaur@aecom.com]
Sent: Monday, 24 July 2017 1:25 PM
To: Peter Ravlic <peter.ravlic@alsglobal.com>; Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>
Cc: Shirley LeCornu <shirley.lecornu@alsglobal.com>; Alan Wilson <Alan.D.Wilson@ghd.com>
Subject: RE: Further CRS testing - Edithvale and Bonbeach

Hi Peter/Shirley

I haven't still received any SRN's for the CRS suite.

Also, here is the list of new samples, which need to be logged for CRS suite. Note, there is one sample for SPOCAS suite as well. Can you please log them soon and send me the SRNs.

Bore ID	Sample Depth	Date	Lab sample ID	CRS suite
ID46 CASS11	3	17/7/17	EM1709324003	x
ID46 CASS11	7	17/7/17	EM1709324011	x
ID46 CASS11	9.5	17/7/17	EM1709324016	x
ID46 CASS11	10.5	17/7/17	EM1709324018	x
ID46 CASS11	12	17/7/17	EM1709324021	x
ID46 CASS11	14	17/7/17	EM1709324025	x
ID46 CASS11	15.5	17/7/17	EM1709324028	x
ID46 CASS11	16.5	17/7/17	EM1709324030	x
ID46-CASS03	0.1	11/7/17	EM1709078001	x
ID46-CASS03	3.0	11/7/17	EM1709078007	x
ID46-CASS03	5.5	11/7/17	EM1709078012	x
ID46-CASS03	7.0	11/7/17	EM1709078015	x
ID18-CASS10	2.0	13/7/17	EM1709193002	x
ID18-CASS10	5.0	13/7/17	EM1709193008	x
ID18-CASS10	8.0	13/7/17	EM1709193014	x
ID18-CASS10	10.0	13/7/17	EM1709193018	x
ID18-CASS10	11.5	13/7/17	EM1709193021	x
ID18-CASS10	14.0	14/7/17	EM1709269001	x
ID18-CASS10	16.0	14/7/17	EM1709269005	x
ID18-CASS10	21.0	14/7/17	EM1709269015	x
				SPOCAS suite
QC1_170717		17/7/17	EM1709324	x

Thanks
Navjot Kaur
Senior Environmental Scientist
D +61 3 9653 8523 M +61 448 901 428
Navjot.Kaur@aecom.com

AECOM

Rebatch

Client / Client code: AECGHD
Project: 3134145 - Bonbeach
Project Manger: Warwick Jordan
Date /time sample rec: 12/7 @ 09:20 & 17/7 @ 15:10
Date/time Instructions rec: 24/7 @ 13:25
Due date: Monday, 31 July 2017
Due date surcharge: **STD**

CS Contact: L Burns
Additional Information:

Environmental Division
Melbourne
Work Order Reference
EM1709754

Telephone : + 61-3-8549 9600

New Lab ID	Sample information						Number of Containers	Analysis										Shortest Holding time expiry
								Standard					Leach					
	Client ID	Sampling Date / Time	Previous Work Order Reference	Previous ALS ID	Tray Number(s)	Container		CRS Suite										
1	ID46 CASS11_3	17/07/2017	EM1709324	3	EB	BAG		X										13-Jan-18
2	ID46 CASS11_7	17/07/2017	EM1709324	11	EB	BAG		X										13-Jan-18
3	ID46 CASS11_9.5	17/07/2017	EM1709324	16	EB	BAG		X										13-Jan-18
4	ID46 CASS11_10.5	17/07/2017	EM1709324	18	EB	BAG		X										13-Jan-18
5	ID46 CASS11_12	17/07/2017	EM1709324	21	EB	BAG		X										13-Jan-18
6	ID46 CASS11_14	17/07/2017	EM1709324	25	EB	BAG		X										13-Jan-18
7	ID46 CASS11_15.5	17/07/2017	EM1709324	28	EB	BAG		X										13-Jan-18
8	ID46 CASS11_16.5	17/07/2017	EM1709324	30	EB	BAG		X										13-Jan-18
9	ID46-CASS03_0.1	11/07/2017	EM1709078	1	EB	BAG		X										07-Jan-18
10	ID46-CASS03_3.0	11/07/2017	EM1709078	7	EB	BAG		X										07-Jan-18
11	ID46-CASS03_5.5	11/07/2017	EM1709078	12	EB	BAG		X										07-Jan-18
12	ID46-CASS03_7.0	11/07/2017	EM1709078	15	EB	BAG		X										07-Jan-18
13	QC1-170717	17/7/17	EM1709324	34	EB	BAG		X										
						TOTAL	0											

Melbourne Enviro Services

Subject: FW: Further CRS testing - Edithvale and Bonbeach

From: Kaur, Navjot [mailto:Navjot.Kaur@aecom.com]
Sent: Monday, 24 July 2017 1:25 PM
To: Peter Ravlic <peter.ravlic@alsglobal.com>; Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>
Cc: Shirley LeCornu <shirley.lecornu@alsglobal.com>; Alan Wilson <Alan.D.Wilson@ghd.com>
Subject: RE: Further CRS testing - Edithvale and Bonbeach

Hi Peter/Shirley

I haven't still received any SRN's for the CRS suite.

Also, here is the list of new samples, which need to be logged for CRS suite. Note, there is one sample for SPOCAS suite as well. Can you please log them soon and send me the SRNs.

Bore ID	Sample Depth	Date	Lab sample ID	CRS suite
ID46 CASS11	3	17/7/17	EM1709324003	x
ID46 CASS11	7	17/7/17	EM1709324011	x
ID46 CASS11	9.5	17/7/17	EM1709324016	x
ID46 CASS11	10.5	17/7/17	EM1709324018	x
ID46 CASS11	12	17/7/17	EM1709324021	x
ID46 CASS11	14	17/7/17	EM1709324025	x
ID46 CASS11	15.5	17/7/17	EM1709324028	x
ID46 CASS11	16.5	17/7/17	EM1709324030	x
ID46-CASS03	0.1	11/7/17	EM1709078001	x
ID46-CASS03	3.0	11/7/17	EM1709078007	x
ID46-CASS03	5.5	11/7/17	EM1709078012	x
ID46-CASS03	7.0	11/7/17	EM1709078015	x
ID18-CASS10	2.0	13/7/17	EM1709193002	x
ID18-CASS10	5.0	13/7/17	EM1709193008	x
ID18-CASS10	8.0	13/7/17	EM1709193014	x
ID18-CASS10	10.0	13/7/17	EM1709193018	x
ID18-CASS10	11.5	13/7/17	EM1709193021	x
ID18-CASS10	14.0	14/7/17	EM1709269001	x
ID18-CASS10	16.0	14/7/17	EM1709269005	x
ID18-CASS10	21.0	14/7/17	EM1709269015	x
				SPOCAS suite
QC1_170717		17/7/17	EM1709324	x

Thanks
Navjot Kaur
Senior Environmental Scientist
D +61 3 9653 8523 M +61 448 901 428
Navjot.Kaur@aecom.com

AECOM

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709757**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 13-Jul-2017 14:50
Order number	: 60506004.1.1	Date Analysis Commenced	: 31-Jul-2017
C-O-C number	: ----	Issue Date	: 31-Jul-2017 16:32
Sampler	: ----		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 8		
No. of samples analysed	: 8		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- This is a rebatch of EM1709193 and EM1709269.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18-CASS10_2.0	ID18-CASS10_5.0	ID18-CASS10_8.0	ID18-CASS10_10.0	ID18-CASS10_11.5
			Client sampling date / time	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00	13-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709757-001	EM1709757-002	EM1709757-003	EM1709757-004	EM1709757-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**7.7**	**5.6**	**5.3**	**6.4**	**6.4**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	**10**	**8**	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	**0.005**	**0.086**	**0.025**	**0.017**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	**54**	**15**	**10**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.47**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**94**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.15**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	**0.02**	**0.10**	**0.02**	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	**14**	**62**	**15**	**10**
Liming Rate	----	1	kg CaCO3/t	<1	**1**	**5**	**1**	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	**0.02**	**0.10**	**0.02**	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	**14**	**62**	**15**	**10**
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	**1**	**5**	**1**	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18-CASS10_14.0	ID18-CASS10_16.0	ID18-CASS10_21.0	----	----
			Client sampling date / time	14-Jul-2017 00:00	14-Jul-2017 00:00	14-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1709757-006	EM1709757-007	EM1709757-008	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**6.1**	**6.2**	**6.0**	**----**	**----**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**3**	<2	**2**	**----**	**----**
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	**----**	**----**
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.095**	**0.014**	<0.005	**----**	**----**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**59**	<10	<10	**----**	**----**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**----**	**----**
Net Acidity (sulfur units)	----	0.02	% S	**0.10**	<0.02	<0.02	**----**	**----**
Net Acidity (acidity units)	----	10	mole H+ / t	**62**	<10	<10	**----**	**----**
Liming Rate	----	1	kg CaCO3/t	**5**	<1	<1	**----**	**----**
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.10**	<0.02	<0.02	**----**	**----**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**62**	<10	<10	**----**	**----**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**5**	<1	<1	**----**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709757**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 13-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 31-Jul-2017
C-O-C number	: ----	Issue Date	: 31-Jul-2017
Sampler	: ----		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 8		
No. of samples analysed	: 8		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Satishkumar Trivedi	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 1022972)									
EM1709754-005	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	7.5	7.1	5.48	0% - 20%
EM1709757-003	ID18-CASS10_8.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	8	8	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.3	5.4	1.87	0% - 20%
EA033-B: Potential Acidity (QC Lot: 1022972)									
EM1709754-005	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.036	0.036	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	22	22	0.00	No Limit
EM1709757-003	ID18-CASS10_8.0	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.086	0.084	1.94	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	54	53	1.94	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 1022972)									
EM1709754-005	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.49	0.45	7.33	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.16	0.14	7.33	0% - 50%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	98	91	7.33	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 1022972)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.2 pH Unit	100	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	56 mole H+ / t	106	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 1022972)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.25483 % S	93.5	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 1022972)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	94.5	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709757**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 13-Jul-2017
Site	: Edithvale LX	Issue Date	: 31-Jul-2017
Sampler	: ----	No. of samples received	: 8
Order number	: 60506004.1.1	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil (EA033) ID18-CASS10_2.0, ID18-CASS10_8.0, ID18-CASS10_11.5	ID18-CASS10_5.0, ID18-CASS10_10.0,	**13-Jul-2017**	**31-Jul-2017**	13-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033) ID18-CASS10_14.0, ID18-CASS10_21.0	ID18-CASS10_16.0,	**14-Jul-2017**	**31-Jul-2017**	14-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
EA033-B: Potential Acidity								
80* dried soil (EA033) ID18-CASS10_2.0, ID18-CASS10_8.0, ID18-CASS10_11.5	ID18-CASS10_5.0, ID18-CASS10_10.0,	**13-Jul-2017**	**31-Jul-2017**	13-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033) ID18-CASS10_14.0, ID18-CASS10_21.0	ID18-CASS10_16.0,	**14-Jul-2017**	**31-Jul-2017**	14-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
EA033-C: Acid Neutralising Capacity								
80* dried soil (EA033) ID18-CASS10_2.0, ID18-CASS10_8.0, ID18-CASS10_11.5	ID18-CASS10_5.0, ID18-CASS10_10.0,	**13-Jul-2017**	**31-Jul-2017**	13-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033) ID18-CASS10_14.0, ID18-CASS10_21.0	ID18-CASS10_16.0,	**14-Jul-2017**	**31-Jul-2017**	14-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
EA033-D: Retained Acidity								
80* dried soil (EA033) ID18-CASS10_2.0, ID18-CASS10_8.0, ID18-CASS10_11.5	ID18-CASS10_5.0, ID18-CASS10_10.0,	**13-Jul-2017**	**31-Jul-2017**	13-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033) ID18-CASS10_14.0, ID18-CASS10_21.0	ID18-CASS10_16.0,	**14-Jul-2017**	**31-Jul-2017**	14-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
80* dried soil (EA033) ID18-CASS10_2.0, ID18-CASS10_5.0, ID18-CASS10_8.0, ID18-CASS10_10.0, ID18-CASS10_11.5	**13-Jul-2017**	**31-Jul-2017**	13-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓
80* dried soil (EA033) ID18-CASS10_14.0, ID18-CASS10_16.0, ID18-CASS10_21.0	**14-Jul-2017**	**31-Jul-2017**	14-Jul-2018	✓	**31-Jul-2017**	29-Oct-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709757**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX		
Sampler	:		

Dates

Date Samples Received	: 13-Jul-2017 14:50	Issue Date	: 26-Jul-2017
Client Requested Due Date	: 31-Jul-2017	Scheduled Reporting Date	: **31-Jul-2017**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1709193 and EM1709269.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EM1709757-001	13-Jul-2017 00:00	ID18-CASS10_2.0	✓
EM1709757-002	13-Jul-2017 00:00	ID18-CASS10_5.0	✓
EM1709757-003	13-Jul-2017 00:00	ID18-CASS10_8.0	✓
EM1709757-004	13-Jul-2017 00:00	ID18-CASS10_10.0	✓
EM1709757-005	13-Jul-2017 00:00	ID18-CASS10_11.5	✓
EM1709757-006	14-Jul-2017 00:00	ID18-CASS10_14.0	✓
EM1709757-007	14-Jul-2017 00:00	ID18-CASS10_16.0	✓
EM1709757-008	14-Jul-2017 00:00	ID18-CASS10_21.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

NAVJOT KAUR

- *AU Certificate of Analysis - NATA (COA)	Email	navjot.kaur@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	navjot.kaur@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	navjot.kaur@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	navjot.kaur@aecom.com
- Chain of Custody (CoC) (COC)	Email	navjot.kaur@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	navjot.kaur@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	navjot.kaur@aecom.com

Rebatch

Client / Client code: AECGHD
Project: 3134145 - Edithvale
Project Manger: Warwick Jordan
Date /time sample rec: 13/7 @ 14:50, 14/7 @ 14:50 & 17/7 @ 15:10
Date/time Instructions rec: 24/07 @ 13:25
Due date: Monday, 31 July 2017
Due date surcharge: **STD**

CS Contact: L Burns
Additional Information:

Environmental Division
Melbourne
Work Order Reference
EM1709757

Telephone : + 61-3-8549 9600

New Lab ID	Sample information: Client ID	Sampling Date / Time	Previous Work Order Reference	Previous ALS ID	Tray Number(s)	Container	Number of Containers	Analysis: Standard: CRS Suite	Standard: SPOCAS	Standard	Standard	Standard	Leach	Leach	Leach	Leach	Leach	Shortest Holding time expiry
1	ID18-CASS10_2.0	13/07/2017	EM1709193	2	EB	BAG		X										09-Jan-18
2	ID18-CASS10_5.0	13/07/2017	EM1709193	8	EB	BAG		X										09-Jan-18
3	ID18-CASS10_8.0	13/07/2017	EM1709193	14	EB	BAG		X										09-Jan-18
4	ID18-CASS10_10.0	13/07/2017	EM1709193	18	EB	BAG		X										09-Jan-18
5	ID18-CASS10_11.5	13/07/2017	EM1709193	21	EB	BAG		X										09-Jan-18
6	ID18-CASS10_14.0	14/07/2017	EM1709269	1	EB	BAG		X										10-Jan-18
7	ID18-CASS10_16.0	14/07/2017	EM1709269	~~4~~	EB	BAG		X										10-Jan-18
8	ID18-CASS10_21.0	14/07/2017	EM1709269	15	EB	BAG		X	X									10-Jan-18
~~9~~	~~QC1_170717~~	~~17/07/2017~~	~~EM1709324~~	~~34~~	~~EB~~	~~BAG~~		~~X~~	Batched under EM1709754.						~~SH 25/7~~			13-Jan-18
						TOTAL	0											

Melbourne Enviro Services

Subject: FW: Further CRS testing - Edithvale and Bonbeach

From: Kaur, Navjot [mailto:Navjot.Kaur@aecom.com]
Sent: Monday, 24 July 2017 1:25 PM
To: Peter Ravlic <peter.ravlic@alsglobal.com>; Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>
Cc: Shirley LeCornu <shirley.lecornu@alsglobal.com>; Alan Wilson <Alan.D.Wilson@ghd.com>
Subject: RE: Further CRS testing - Edithvale and Bonbeach

Hi Peter/Shirley

I haven't still received any SRN's for the CRS suite.

Also, here is the list of new samples, which need to be logged for CRS suite. Note, there is one sample for SPOCAS suite as well. Can you please log them soon and send me the SRNs.

Bore ID	Sample Depth	Date	Lab sample ID	CRS suite
ID46 CASS11	3	17/7/17	EM1709324003	x
ID46 CASS11	7	17/7/17	EM1709324011	x
ID46 CASS11	9.5	17/7/17	EM1709324016	x
ID46 CASS11	10.5	17/7/17	EM1709324018	x
ID46 CASS11	12	17/7/17	EM1709324021	x
ID46 CASS11	14	17/7/17	EM1709324025	x
ID46 CASS11	15.5	17/7/17	EM1709324028	x
ID46 CASS11	16.5	17/7/17	EM1709324030	x
ID46-CASS03	0.1	11/7/17	EM1709078001	x
ID46-CASS03	3.0	11/7/17	EM1709078007	x
ID46-CASS03	5.5	11/7/17	EM1709078012	x
ID46-CASS03	7.0	11/7/17	EM1709078015	x
ID18-CASS10	2.0	13/7/17	EM1709193002	x
ID18-CASS10	5.0	13/7/17	EM1709193008	x
ID18-CASS10	8.0	13/7/17	EM1709193014	x
ID18-CASS10	10.0	13/7/17	EM1709193018	x
ID18-CASS10	11.5	13/7/17	EM1709193021	x
ID18-CASS10	14.0	14/7/17	EM1709269001	x
ID18-CASS10	16.0	14/7/17	EM1709269005	x
ID18-CASS10	21.0	14/7/17	EM1709269015	x
				SPOCAS suite
QC1_170717		17/7/17	EM1709324	x

Thanks
Navjot Kaur
Senior Environmental Scientist
D +61 3 9653 8523 M +61 448 901 428
Navjot.Kaur@aecom.com

AECOM

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709759**	Page	: 1 of 2
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017 09:40
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017 16:22
Sampler	: JR		
Site	: Bonbeach - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Client sample ID*	**ID46_CASS10_19.5**	**ID46_CASS10_20.0**	**----**	**----**	**----**
			Client sampling date / time	24-Jul-2017 00:00	24-Jul-2017 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EM1709759-001**	**EM1709759-002**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.6**	**8.8**	**----**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**8.2**	**7.9**	**----**	**----**	**----**
Reaction Rate	----	1	-	**4**	**4**	**----**	**----**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709759**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 25-Jul-2017
C-O-C number	: ----	Issue Date	: 25-Jul-2017
Sampler	: JR		
Site	: Bonbeach - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709759**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017
Site	: Bonbeach - LXRA	Issue Date	: 25-Jul-2017
Sampler	: JR	No. of samples received	: 2
Order number	: 60506004.1.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag (EA037)							
ID46_CASS10_19.5, ID46_CASS10_20.0	**24-Jul-2017**	**25-Jul-2017**	25-Jul-2017	✓	**25-Jul-2017**	25-Jul-2017	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709759**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach - LXRA		
Sampler	: JR		

Dates

Date Samples Received	: 25-Jul-2017 09:40	Issue Date	: 25-Jul-2017
Client Requested Due Date	: 01-Aug-2017	Scheduled Reporting Date	: **01-Aug-2017**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 0.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709759-001	24-Jul-2017 00:00	ID46_CASS10_19.5	✓
EM1709759-002	24-Jul-2017 00:00	ID46_CASS10_20.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

GHD

Melbourne Office Address	Completion Date / Turnaround	Quote # / GHD Reference
180 Lonsdale Street, Melbourne 3000 Telephone: 613 8687 8000 Fax: 613 8687 8111	STANDARD	

Job Number	GHD Contact	Laboratory: ALS - SPRINGVALE
3134145	ALAN WILSON	Address:
Project: BONBEACH - LXRA		Laboratory Contact:
GHD Project Manager: JOSEPH HIXSON	GHD Contact: 25/7/17	
GHD PM email	GHD Contact email	

COURIER AND LABORATORY INSTRUCTIONS:
Sign white copy on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Composite Sample	Sample Matrix: S. Soil, Sd. Sludge, W. Water, A. Air, GW. Groundwater	Container: Type: V. Vial, G. glass bottle, P. plastic bottle	Number	Volume (mL)	Analyses Required: ASS FIELD SCREEN	SAMPLE COMMENTS
ID46-CASS10_19.5	24/7	PM		S	B			✓	
-20.0	24/7	PM		S	B			✓	

Environmental Division
Melbourne
Work Order Reference
EM1709759

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:	2
TOTAL NUMBER OF ESKIES:	1
SAMPLES/ESKY CHILLED? Y / N:	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY		25/7/17 @ 9:00
GHD SERVICE CENTRE			
COURIER	× by 20	25/7/17 @ 9:00	
LABORATORY	Bharathi (ALS)	25/7/17 9:40	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709803**	Page	: 1 of 11
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017 15:10
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 27-Jul-2017 12:46
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 43		
No. of samples analysed	: 43		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS20_0.1	ID46CASS20_2	ID46CASS20_2.5	ID46CASS20_3	ID46CASS20_3.5
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709803-001	EM1709803-002	EM1709803-003	EM1709803-004	EM1709803-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.0**	**7.1**	**6.8**	**6.5**	**8.6**
pH (Fox)	----	0.1	pH Unit		**5.3**	**5.1**	**5.2**	**5.2**	**6.0**
Reaction Rate	----	1	-		**2**	**1**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS20_4	ID46CASS20_4.5	ID46CASS20_5.5	ID46CASS20_6	ID46CASS19_0.1
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709803-006	EM1709803-007	EM1709803-008	EM1709803-009	EM1709803-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.8**	**8.9**	**9.0**	**8.8**	**8.8**
pH (Fox)	----	0.1	pH Unit		**5.7**	**5.8**	**6.0**	**5.9**	**5.9**
Reaction Rate	----	1	-		**1**	**1**	**1**	**2**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS19_0.5	ID46CASS19_1	ID46CASS19_1.5	ID46CASS19_2	ID46CASS19_2.5
			Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709803-011	EM1709803-012	EM1709803-013	EM1709803-014	EM1709803-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**7.9**	**7.4**	**7.1**	**6.4**	**5.7**
pH (Fox)	----	0.1	pH Unit	**5.4**	**5.3**	**5.2**	**5.0**	**5.0**
Reaction Rate	----	1	-	**2**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS19_3	DUP1_250717	DUP2_250717	ID46CASS19_3.5	ID46CASS19_4
			Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709803-016	EM1709803-017	EM1709803-018	EM1709803-019	EM1709803-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.1**	**7.4**	**8.7**	**7.2**	**7.5**
pH (Fox)	----	0.1	pH Unit	**5.1**	**5.3**	**5.9**	**5.0**	**5.2**
Reaction Rate	----	1	-	**1**	**2**	**2**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS19_4.5	ID46CASS19_5	ID46CASS19_5.5	ID46CASS19_6.2	ID46CASS19_6.5
			Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709803-021	EM1709803-022	EM1709803-023	EM1709803-024	EM1709803-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.7**	**8.5**	**8.7**	**8.9**	**8.8**
pH (Fox)	----	0.1	pH Unit	**5.4**	**5.2**	**5.8**	**5.9**	**6.0**
Reaction Rate	----	1	-	**2**	**2**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS19_7	DUP3_250717	ID46CASS18_0.1	ID46CASS18_0.5	ID46CASS18_1
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709803-026	EM1709803-027	EM1709803-028	EM1709803-029	EM1709803-030
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.8**	**7.6**	**7.2**	**8.1**	**7.6**
pH (Fox)	----	0.1	pH Unit		**6.1**	**6.0**	**5.4**	**5.4**	**5.5**
Reaction Rate	----	1	-		**2**	**1**	**1**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS18_1.5	ID46CASS18_2	ID46CASS18_2.5	ID46CASS18_3	ID46CASS18_3.5
			Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709803-031	EM1709803-032	EM1709803-033	EM1709803-034	EM1709803-035
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.8**	**4.6**	**4.4**	**4.3**	**4.6**
pH (Fox)	----	0.1	pH Unit	**5.3**	**5.5**	**4.6**	**4.0**	**3.4**
Reaction Rate	----	1	-	**1**	**2**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS18_4	ID46CASS18_4.5	ID46CASS18_5	ID46CASS18_5.5	ID46CASS18_6
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709803-036	EM1709803-037	EM1709803-038	EM1709803-039	EM1709803-040
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**4.9**	**5.9**	**6.2**	**6.5**	**8.4**
pH (Fox)	----	0.1	pH Unit		**4.0**	**4.1**	**5.0**	**5.2**	**5.2**
Reaction Rate	----	1	-		**1**	**1**	**2**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS18_6.5	ID46CASS18_7	ID46CASS20_5	----	----
			Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1709803-041	EM1709803-042	EM1709803-043	--------	--------
				Result	Result	Result	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.7**	**8.8**	**8.9**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**5.6**	**5.8**	**5.9**	**----**	**----**
Reaction Rate	----	1	-	**1**	**2**	**2**	**----**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709803**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 27-Jul-2017
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 43		
No. of samples analysed	: 43		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709803**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017
Site	: Bonbeach LX	Issue Date	: 27-Jul-2017
Sampler	: ADW	No. of samples received	: 43
Order number	: 60506004.1.1	No. of samples analysed	: 43

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID46CASS20_0.1, ID46CASS20_2, ID46CASS20_2.5, ID46CASS20_3, ID46CASS20_3.5, ID46CASS20_4, ID46CASS20_4.5, ID46CASS20_5.5, ID46CASS20_6, ID46CASS19_0.1, ID46CASS19_0.5, ID46CASS19_1, ID46CASS19_1.5, ID46CASS19_2, ID46CASS19_2.5, ID46CASS19_3, DUP1_250717, DUP2_250717, ID46CASS19_3.5, ID46CASS19_4, ID46CASS19_4.5, ID46CASS19_5, ID46CASS19_5.5, ID46CASS19_6.2, ID46CASS19_6.5, ID46CASS19_7, DUP3_250717, ID46CASS18_0.1, ID46CASS18_0.5, ID46CASS18_1, ID46CASS18_1.5, ID46CASS18_2, ID46CASS18_2.5, ID46CASS18_3, ID46CASS18_3.5, ID46CASS18_4, ID46CASS18_4.5, ID46CASS18_5, ID46CASS18_5.5, ID46CASS18_6, ID46CASS18_6.5, ID46CASS18_7, ID46CASS20_5	**25-Jul-2017**	**27-Jul-2017**	21-Jan-2018	✓	**27-Jul-2017**	21-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709803**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 25-Jul-2017 15:10	Issue Date	: 25-Jul-2017
Client Requested Due Date	: 01-Aug-2017	Scheduled Reporting Date	: **01-Aug-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 43 / 42

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis
EM1709803-001	25-Jul-2017 00:00	ID46CASS20_0.1		✓
EM1709803-002	25-Jul-2017 00:00	ID46CASS20_2		✓
EM1709803-003	25-Jul-2017 00:00	ID46CASS20_2.5		✓
EM1709803-004	25-Jul-2017 00:00	ID46CASS20_3		✓
EM1709803-005	25-Jul-2017 00:00	ID46CASS20_3.5		✓
EM1709803-006	25-Jul-2017 00:00	ID46CASS20_4		✓
EM1709803-007	25-Jul-2017 00:00	ID46CASS20_4.5		✓
EM1709803-008	25-Jul-2017 00:00	ID46CASS20_5.5		✓
EM1709803-009	25-Jul-2017 00:00	ID46CASS20_6		✓
EM1709803-010	25-Jul-2017 00:00	ID46CASS19_0.1		✓
EM1709803-011	25-Jul-2017 00:00	ID46CASS19_0.5		✓
EM1709803-012	25-Jul-2017 00:00	ID46CASS19_1		✓
EM1709803-013	25-Jul-2017 00:00	ID46CASS19_1.5		✓
EM1709803-014	25-Jul-2017 00:00	ID46CASS19_2		✓
EM1709803-015	25-Jul-2017 00:00	ID46CASS19_2.5		✓
EM1709803-016	25-Jul-2017 00:00	ID46CASS19_3		✓
EM1709803-017	25-Jul-2017 00:00	DUP1_250717		✓
EM1709803-018	25-Jul-2017 00:00	DUP2_250717		✓
EM1709803-019	25-Jul-2017 00:00	ID46CASS19_3.5		✓
EM1709803-020	25-Jul-2017 00:00	ID46CASS19_4		✓
EM1709803-021	25-Jul-2017 00:00	ID46CASS19_4.5		✓
EM1709803-022	25-Jul-2017 00:00	ID46CASS19_5		✓
EM1709803-023	25-Jul-2017 00:00	ID46CASS19_5.5		✓
EM1709803-024	25-Jul-2017 00:00	ID46CASS19_6.2		✓
EM1709803-025	25-Jul-2017 00:00	ID46CASS19_6.5		✓
EM1709803-026	25-Jul-2017 00:00	ID46CASS19_7		✓
EM1709803-027	25-Jul-2017 00:00	DUP3_250717		✓
EM1709803-028	25-Jul-2017 00:00	ID46CASS18_0.1		✓
EM1709803-029	25-Jul-2017 00:00	ID46CASS18_0.5		✓
EM1709803-030	25-Jul-2017 00:00	ID46CASS18_1		✓
EM1709803-031	25-Jul-2017 00:00	ID46CASS18_1.5		✓
EM1709803-032	25-Jul-2017 00:00	ID46CASS18_2		✓
EM1709803-033	25-Jul-2017 00:00	ID46CASS18_2.5		✓
EM1709803-034	25-Jul-2017 00:00	ID46CASS18_3		✓
EM1709803-035	25-Jul-2017 00:00	ID46CASS18_3.5		✓

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis
EM1709803-036	25-Jul-2017 00:00	ID46CASS18_4		✓
EM1709803-037	25-Jul-2017 00:00	ID46CASS18_4.5		✓
EM1709803-038	25-Jul-2017 00:00	ID46CASS18_5		✓
EM1709803-039	25-Jul-2017 00:00	ID46CASS18_5.5		✓
EM1709803-040	25-Jul-2017 00:00	ID46CASS18_6		✓
EM1709803-041	25-Jul-2017 00:00	ID46CASS18_6.5		✓
EM1709803-042	25-Jul-2017 00:00	ID46CASS18_7		✓
EM1709803-043	25-Jul-2017 00:00	ID46CASS20_5	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709803**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 25-Jul-2017 15:10	Issue Date	: 26-Jul-2017
Client Requested Due Date	: 01-Aug-2017	Scheduled Reporting Date	: **01-Aug-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 43 / 43

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709803-001	25-Jul-2017 00:00	ID46CASS20_0.1	✓
EM1709803-002	25-Jul-2017 00:00	ID46CASS20_2	✓
EM1709803-003	25-Jul-2017 00:00	ID46CASS20_2.5	✓
EM1709803-004	25-Jul-2017 00:00	ID46CASS20_3	✓
EM1709803-005	25-Jul-2017 00:00	ID46CASS20_3.5	✓
EM1709803-006	25-Jul-2017 00:00	ID46CASS20_4	✓
EM1709803-007	25-Jul-2017 00:00	ID46CASS20_4.5	✓
EM1709803-008	25-Jul-2017 00:00	ID46CASS20_5.5	✓
EM1709803-009	25-Jul-2017 00:00	ID46CASS20_6	✓
EM1709803-010	25-Jul-2017 00:00	ID46CASS19_0.1	✓
EM1709803-011	25-Jul-2017 00:00	ID46CASS19_0.5	✓
EM1709803-012	25-Jul-2017 00:00	ID46CASS19_1	✓
EM1709803-013	25-Jul-2017 00:00	ID46CASS19_1.5	✓
EM1709803-014	25-Jul-2017 00:00	ID46CASS19_2	✓
EM1709803-015	25-Jul-2017 00:00	ID46CASS19_2.5	✓
EM1709803-016	25-Jul-2017 00:00	ID46CASS19_3	✓
EM1709803-017	25-Jul-2017 00:00	DUP1_250717	✓
EM1709803-018	25-Jul-2017 00:00	DUP2_250717	✓
EM1709803-019	25-Jul-2017 00:00	ID46CASS19_3.5	✓
EM1709803-020	25-Jul-2017 00:00	ID46CASS19_4	✓
EM1709803-021	25-Jul-2017 00:00	ID46CASS19_4.5	✓
EM1709803-022	25-Jul-2017 00:00	ID46CASS19_5	✓
EM1709803-023	25-Jul-2017 00:00	ID46CASS19_5.5	✓
EM1709803-024	25-Jul-2017 00:00	ID46CASS19_6.2	✓
EM1709803-025	25-Jul-2017 00:00	ID46CASS19_6.5	✓
EM1709803-026	25-Jul-2017 00:00	ID46CASS19_7	✓
EM1709803-027	25-Jul-2017 00:00	DUP3_250717	✓
EM1709803-028	25-Jul-2017 00:00	ID46CASS18_0.1	✓
EM1709803-029	25-Jul-2017 00:00	ID46CASS18_0.5	✓
EM1709803-030	25-Jul-2017 00:00	ID46CASS18_1	✓
EM1709803-031	25-Jul-2017 00:00	ID46CASS18_1.5	✓
EM1709803-032	25-Jul-2017 00:00	ID46CASS18_2	✓
EM1709803-033	25-Jul-2017 00:00	ID46CASS18_2.5	✓
EM1709803-034	25-Jul-2017 00:00	ID46CASS18_3	✓
EM1709803-035	25-Jul-2017 00:00	ID46CASS18_3.5	✓

			SOIL - EA037 ASS Field Screening Analysis
EM1709803-036	25-Jul-2017 00:00	ID46CASS18_4	✓
EM1709803-037	25-Jul-2017 00:00	ID46CASS18_4.5	✓
EM1709803-038	25-Jul-2017 00:00	ID46CASS18_5	✓
EM1709803-039	25-Jul-2017 00:00	ID46CASS18_5.5	✓
EM1709803-040	25-Jul-2017 00:00	ID46CASS18_6	✓
EM1709803-041	25-Jul-2017 00:00	ID46CASS18_6.5	✓
EM1709803-042	25-Jul-2017 00:00	ID46CASS18_7	✓
EM1709803-043	25-Jul-2017 00:00	ID46CASS20_5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

OF CUSTODY RECORD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: Standard

Quote # / GHD Reference:

Job Number: 31341145	GHD Contact: A. Wilson
Project: Barbeach LX Removal	
GHD Project Manager: J. Hixon	GHD Contact: A. Wilson
GHD PM email:	GHD Contact email:

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix: S Soil, SL Sludge, W Water, A Air, GW Groundwater	Container Type: B Glass jar, Teflon lined, G Glass bottle, P Plastic bottle	Container Numbers	Container Volume (ml)	Analyses Required: Hss fieldscreen	SAMPLE COMMENTS
1	1046CHSS20_0.1	25/7/17	Am		S	B			✓	
2	2								✓	
3	2.5								✓	
4	3								✓	
5	3.5								✓	
6	4								✓	
7	4.5								✓	
8	5.5								✓	
9	6								✓	
10	1046CHSS19_0.1								✓	
11	0.5								✓	
12	1								✓	
13	1.5								✓	
14	2								✓	
15	2.5								✓	
16	3								✓	
17	DUP125071 7								✓	

Environmental Division
Melbourne
Work Order Reference
EM1709803

Telephone : +61-3-9549 9600

TOTAL NUMBER OF SAMPLES:	GENERAL COMMENTS:
TOTAL NUMBER OF ESKIES:	
SAMPLES ESKY CHILLED? Y/N	

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	ADW	25/7/17	
GHD SERVICE CENTRE		25.07.17	
COURIER	Andrew	14:25 Hrs	
LABORATORY	Scott Mills 199	25/7/17, 15.10.	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Samples	Sample Matrix: S: Soil, SL: Sludge, W: Water, A: Air, SW: Groundwater	Container Type: B: bag, V: vial, G: glass, O: other, P: plastic/perspex	Container Number	Container Volume (mL)	Analyses Required: ASS Field Screen	SAMPLE COMMENTS
18	DUP2-250717	25/7/17	Am		S	B			✓	
19	ID46CASS19-3.65								✓	
20	4								✓	
21	4.5								✓	
22	5								✓	
23	5.5								✓	
24	6.2								✓	
25	6.5								✓	
26	7								✓	
27	DUP3-250717		Pm						✓	
28	ID46CASS18-0.1								✓	
29	0.5								✓	
30	1								✓	
31	1.5								✓	
32	2								✓	
33	2.5								✓	
34	3								✓	

TOTAL NUMBER OF SAMPLES:	
TOTAL NUMBER OF ESKIES:	
SAMPLES/ESKY CHILLED? Y / N	

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Scott (MZS)	25/7/17, 15.10	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround:

Quote # / GHD Reference:

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil W: Water A: Air GW: Groundwater	Container Type B: Bag V: Vial G: Glass Bottle P: Plastic Bottle	Container Number	Container Volume (mL)	Analyses Required: XRF field screen	SAMPLE COMMENTS
35	1046C1SS18-3.5	25/7/17	PM		S	B			✓	
36	4								✓	
37	4.5								✓	
38	5								✓	
39	5.5								✓	
40	6								✓	
41	6.5								✓	
42	7								✓	

TOTAL NUMBER OF SAMPLES:

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED? Y / N

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Scott (ALS)	25/7/17, 15.10.	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709805**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017 15:10
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 27-Jul-2017 12:45
Sampler	: JOSHUA RILEY		
Site	: Edithvale - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 11		
No. of samples analysed	: 11		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_9.0	ID18-CASS06_9.5	ID18-CASS06_10.0	ID18-CASS06_10.5	ID18-CASS06_11.0
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709805-001	EM1709805-002	EM1709805-003	EM1709805-004	EM1709805-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.2**	**8.7**	**8.4**	**8.6**	**9.1**
pH (Fox)	----	0.1	pH Unit		**3.8**	**5.2**	**4.5**	**5.2**	**5.9**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_11.5	ID18-CASS06_12.0	ID18-CASS06_12.5	ID18-CASS06_13.0	ID18-CASS06_13.5
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709805-006	EM1709805-007	EM1709805-008	EM1709805-009	EM1709805-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**9.5**	**9.0**	**8.7**	**9.5**	**9.2**
pH (Fox)	----	0.1	pH Unit		**5.6**	**4.4**	**2.6**	**1.4**	**2.4**
Reaction Rate	----	1	-		**1**	**2**	**3**	**4**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18-CASS06_14.0	----	----	----	----
				Client sampling date / time	25-Jul-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1709805-011	--------	--------	--------	--------
					Result	----	----	----	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**9.3**	----	----	----	----
pH (Fox)	----	0.1	pH Unit		**1.5**	----	----	----	----
Reaction Rate	----	1	-		**4**	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709805**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 27-Jul-2017
Sampler	: JOSHUA RILEY		
Site	: Edithvale - LXRA		
Quote number	: ME/235/17		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709805**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 25-Jul-2017
Site	: Edithvale - LXRA	Issue Date	: 27-Jul-2017
Sampler	: JOSHUA RILEY	No. of samples received	: 11
Order number	: 60506004.1.1	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID18-CASS06_9.0,	ID18-CASS06_9.5,	**25-Jul-2017**	**27-Jul-2017**	21-Jan-2018	✓	**27-Jul-2017**	21-Jan-2018	✓
ID18-CASS06_10.0,	ID18-CASS06_10.5,							
ID18-CASS06_11.0,	ID18-CASS06_11.5,							
ID18-CASS06_12.0,	ID18-CASS06_12.5,							
ID18-CASS06_13.0,	ID18-CASS06_13.5,							
ID18-CASS06_14.0								

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709805**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 2
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale - LXRA		
Sampler	: JOSHUA RILEY		

Dates

Date Samples Received	: 25-Jul-2017 15:10	Issue Date	: 25-Jul-2017
Client Requested Due Date	: 01-Aug-2017	Scheduled Reporting Date	: **01-Aug-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709805-001	25-Jul-2017 00:00	ID18-CASS06_9.0	✓
EM1709805-002	25-Jul-2017 00:00	ID18-CASS06_9.5	✓
EM1709805-003	25-Jul-2017 00:00	ID18-CASS06_10.0	✓
EM1709805-004	25-Jul-2017 00:00	ID18-CASS06_10.5	✓
EM1709805-005	25-Jul-2017 00:00	ID18-CASS06_11.0	✓
EM1709805-006	25-Jul-2017 00:00	ID18-CASS06_11.5	✓
EM1709805-007	25-Jul-2017 00:00	ID18-CASS06_12.0	✓
EM1709805-008	25-Jul-2017 00:00	ID18-CASS06_12.5	✓
EM1709805-009	25-Jul-2017 00:00	ID18-CASS06_13.0	✓
EM1709805-010	25-Jul-2017 00:00	ID18-CASS06_13.5	✓
EM1709805-011	25-Jul-2017 00:00	ID18-CASS06_14.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number	GHD Contact
3134145	ALAN WILSON
Project: EDITHVALE - LXRA	
GHD Project Manager: JOSEPH HIXSON	GHD Contact: 25/7/17
GHD PM email	GHD Contact email

Laboratory: ALS-SPRINGVALE

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix: S Soil, SL Sludge, W Water, A Air	Container Type: J 250ml Jar, B bag, V Vial, G Glass bottle, P plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS FIELD SCREEN	SAMPLE COMMENTS
1	ID18-CASS06_9.0	25/7	AM		S	B			✓	
2	_9.5								✓	
3	_10.0								✓	
4	_10.5								✓	
5	_11.0		PM						✓	
6	_11.5								✓	
7	_12.0								✓	
8	_12.5								✓	
9	_13.0								✓	
10	_13.5								✓	
11	_14.0								✓	

Environmental Division
Melbourne
Work Order Reference
EM1709805

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:	11
TOTAL NUMBER OF ESKIES:	1
SAMPLES/ESKY CHILLED? Y/N	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY		25/7/17 @ 14:35
GHD SERVICE CENTRE			
COURIER	x Andrew	25/7/17 @ 14:35	
LABORATORY		Scott (ALS), 25/7/17, 15.10.	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709848**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017 09:45
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017 12:33
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 29		
No. of samples analysed	: 29		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS17_0.1	ID46CASS17_1.5	ID46CASS17_2	ID46CASS17_2.5	ID46CASS17_3
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709848-001	EM1709848-002	EM1709848-003	EM1709848-004	EM1709848-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**8.5**	**8.6**	**5.9**	**5.5**	**5.3**
pH (Fox)	----	0.1	pH Unit		**6.1**	**6.0**	**4.9**	**4.7**	**4.5**
Reaction Rate	----	1	-		**2**	**2**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS17_3.5	ID46CASS17_4	ID46CASS17_4.5	ID46CASS17_5	ID46CASS17_5.5
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709848-006	EM1709848-007	EM1709848-008	EM1709848-009	EM1709848-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.2**	**4.5**	**5.8**	**7.3**	**8.3**
pH (Fox)	----	0.1	pH Unit		**4.8**	**4.3**	**4.9**	**5.3**	**5.9**
Reaction Rate	----	1	-		**1**	**2**	**2**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS17_6	ID46CASS17_6.4	ID46CASS17_7	ID18CASS20_0.1	ID18CASS20_1
				Client sampling date / time	25-Jul-2017 00:00	25-Jul-2017 00:00	25-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709848-011	EM1709848-012	EM1709848-013	EM1709848-014	EM1709848-015
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**7.5**	**8.6**	**8.3**	**6.0**	**5.0**
pH (Fox)	----	0.1	pH Unit		**5.9**	**5.6**	**6.1**	**4.6**	**4.6**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS20_1.5	ID18CASS20_2	ID18CASS20_2.5	ID18CASS20_3	ID18CASS20_3.5
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709848-016	EM1709848-017	EM1709848-018	EM1709848-019	EM1709848-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.6**	**4.5**	**4.4**	**4.3**	**4.2**
pH (Fox)	----	0.1	pH Unit	**5.0**	**4.3**	**4.4**	**4.2**	**3.7**
Reaction Rate	----	1	-	**2**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS20_4	ID18CASS20_4.5	ID18CASS20_5	ID18CASS20_5.5	ID18CASS20_6
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709848-021	EM1709848-022	EM1709848-023	EM1709848-024	EM1709848-025
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**4.2**	**5.0**	**4.9**	**5.3**	**5.5**
pH (Fox)	----	0.1	pH Unit		**4.0**	**4.8**	**4.7**	**4.9**	**4.8**
Reaction Rate	----	1	-		**2**	**2**	**2**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS20_6.5	ID18CASS20_7	DUP1_260717	ID46CASS17_0.5	----
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	25-Jul-2017 00:00	----
Compound	CAS Number	LOR	Unit	EM1709848-026	EM1709848-027	EM1709848-028	EM1709848-029	--------
				Result	Result	Result	Result	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.7**	**5.6**	**4.2**	**5.3**	**----**
pH (Fox)	----	0.1	pH Unit	**2.3**	**1.6**	**3.8**	**4.2**	**----**
Reaction Rate	----	1	-	**2**	**2**	**1**	**2**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709848**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017
Sampler	: ADW		
Site	: Bonbeach LX		
Quote number	: ME/235/17		
No. of samples received	: 29		
No. of samples analysed	: 29		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709848**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017
Site	: Bonbeach LX	Issue Date	: 28-Jul-2017
Sampler	: ADW	No. of samples received	: 29
Order number	: 60506004.1.1	No. of samples analysed	: 29

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID46CASS17_0.1,	ID46CASS17_1.5,	**25-Jul-2017**	**27-Jul-2017**	21-Jan-2018	✓	**27-Jul-2017**	21-Jan-2018	✓
ID46CASS17_2,	ID46CASS17_2.5,							
ID46CASS17_3,	ID46CASS17_3.5,							
ID46CASS17_4,	ID46CASS17_4.5,							
ID46CASS17_5,	ID46CASS17_5.5,							
ID46CASS17_6,	ID46CASS17_6.4,							
ID46CASS17_7,	ID46CASS17_0.5							
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID18CASS20_0.1,	ID18CASS20_1,	**26-Jul-2017**	**27-Jul-2017**	22-Jan-2018	✓	**27-Jul-2017**	22-Jan-2018	✓
ID18CASS20_1.5,	ID18CASS20_2,							
ID18CASS20_2.5,	ID18CASS20_3,							
ID18CASS20_3.5,	ID18CASS20_4,							
ID18CASS20_4.5,	ID18CASS20_5,							
ID18CASS20_5.5,	ID18CASS20_6,							
ID18CASS20_6.5,	ID18CASS20_7,							
DUP1_260717								

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709848**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bonbeach LX		
Sampler	: ADW		

Dates

Date Samples Received	: 26-Jul-2017 09:45	Issue Date	: 26-Jul-2017
Client Requested Due Date	: 02-Aug-2017	Scheduled Reporting Date	: **02-Aug-2017**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 5.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 29 / 29

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709848-001	25-Jul-2017 00:00	ID46CASS17_0.1	✓
EM1709848-002	25-Jul-2017 00:00	ID46CASS17_1.5	✓
EM1709848-003	25-Jul-2017 00:00	ID46CASS17_2	✓
EM1709848-004	25-Jul-2017 00:00	ID46CASS17_2.5	✓
EM1709848-005	25-Jul-2017 00:00	ID46CASS17_3	✓
EM1709848-006	25-Jul-2017 00:00	ID46CASS17_3.5	✓
EM1709848-007	25-Jul-2017 00:00	ID46CASS17_4	✓
EM1709848-008	25-Jul-2017 00:00	ID46CASS17_4.5	✓
EM1709848-009	25-Jul-2017 00:00	ID46CASS17_5	✓
EM1709848-010	25-Jul-2017 00:00	ID46CASS17_5.5	✓
EM1709848-011	25-Jul-2017 00:00	ID46CASS17_6	✓
EM1709848-012	25-Jul-2017 00:00	ID46CASS17_6.4	✓
EM1709848-013	25-Jul-2017 00:00	ID46CASS17_7	✓
EM1709848-014	26-Jul-2017 00:00	ID18CASS20_0.1	✓
EM1709848-015	26-Jul-2017 00:00	ID18CASS20_1	✓
EM1709848-016	26-Jul-2017 00:00	ID18CASS20_1.5	✓
EM1709848-017	26-Jul-2017 00:00	ID18CASS20_2	✓
EM1709848-018	26-Jul-2017 00:00	ID18CASS20_2.5	✓
EM1709848-019	26-Jul-2017 00:00	ID18CASS20_3	✓
EM1709848-020	26-Jul-2017 00:00	ID18CASS20_3.5	✓
EM1709848-021	26-Jul-2017 00:00	ID18CASS20_4	✓
EM1709848-022	26-Jul-2017 00:00	ID18CASS20_4.5	✓
EM1709848-023	26-Jul-2017 00:00	ID18CASS20_5	✓
EM1709848-024	26-Jul-2017 00:00	ID18CASS20_5.5	✓
EM1709848-025	26-Jul-2017 00:00	ID18CASS20_6	✓
EM1709848-026	26-Jul-2017 00:00	ID18CASS20_6.5	✓
EM1709848-027	26-Jul-2017 00:00	ID18CASS20_7	✓
EM1709848-028	26-Jul-2017 00:00	DUP1_260717	✓
EM1709848-029	25-Jul-2017 00:00	ID46CASS17_0.5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: Standard

Quote # / GHD Reference:

Job Number: 31341145	GHD Contact: A.Wilson
Project: Bombeach Ck Renewal	
GHD Project Manager: J.Hixon	GHD Contact: A.Wilson
GHD PM email:	GHD Contact email:

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Lab ID	Sample Matrix: S: Soil, SL: Sludge, W: Water, A: Air, QW: Groundwater	Container: Type: J: 250gr. Bottle, V: 1ltr. G: Glass bottle, P: plastic bottle	Number	Volume (mL)	Analyses Required: ASS field screen	SAMPLE COMMENTS
ID46CASS17 -0.1	25/7/17	PM	1	S	B			✓	
1.5			2					✓	
2			3					✓	
2.5			4					✓	
3			5					✓	
3.5			6					✓	
4			7					✓	
4.5			8					✓	
5			9					✓	
5.5			10					✓	
6			11					✓	
6.4			12					✓	
7			13					✓	
ID18CASS20 -01	26/7/17	AM	14					✓	
0.5			-					✓	Not received SH 26/7.
1			15					✓	
1.5			16					✓	

Environmental Division
Melbourne
Work Order Reference
EM1709848

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:
TOTAL NUMBER OF ESKIES:
SAMPLES/ESKY CHILLED? Y/N:
GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	ADW 25/26 July		
GHD SERVICE CENTRE			
COURIER	TNT 203	9:10	
LABORATORY	Ronnie AM	26/7 9:50	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign white copy on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Lab ID (Laboratory Sample Number)	Sample Matrix (S: Soil, SW: Surface Water, W: Water, A: Air, GW: Groundwater)	Container Type (V: Vial, G: Glass bottle, P: Plastic bottle, B: Bag)	Container Number	Container Volume (mL)	Analyses Required: Ass field screen	SAMPLE COMMENTS
1D18CASS20_2	24/7/17	AM	17	S	B			✓	
2.5			18					✓	
3			19					✓	
3.5			20					✓	
4			21					✓	
4.5			22					✓	
5			23					✓	
5.5			24					✓	
6			25					✓	
6.5			26					✓	
7			27					✓	
DUP1260717			28					✓	
Extra Sample:									
1046CASS17_0.5	25/7/17		29	S	B				

TOTAL NUMBER OF SAMPLES:

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED? Y / N

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Norma Gan	26/7 9:45	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709882**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017 16:05
Order number	: 60506004.1.1	Date Analysis Commenced	: 28-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017 12:21
Sampler	: JR		
Site	: LXRA - Edithvale		
Quote number	: ME/235/17		
No. of samples received	: 16		
No. of samples analysed	: 16		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18_CASS06_14.5	ID18_CASS06_15.0	ID18_CASS06_15.5	ID18_CASS06_16.0	ID18_CASS06_16.5
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709882-001	EM1709882-002	EM1709882-003	EM1709882-004	EM1709882-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**9.4**	**9.2**	**8.6**	**8.6**	**8.5**
pH (Fox)	----	0.1	pH Unit	**8.2**	**5.7**	**7.2**	**7.8**	**6.5**
Reaction Rate	----	1	-	**4**	**4**	**4**	**4**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18_CASS06_17.0	ID18_CASS06_17.5	ID18_CASS06_18.0	ID18_CASS06_18.5	ID18_CASS06_19.0
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709882-006	EM1709882-007	EM1709882-008	EM1709882-009	EM1709882-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.4**	**8.6**	**8.6**	**8.2**	**8.1**
pH (Fox)	----	0.1	pH Unit	**7.8**	**5.6**	**7.9**	**6.0**	**5.5**
Reaction Rate	----	1	-	**2**	**4**	**4**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18_CASS06_19.5	ID18_CASS06_20.0	ID18_CASS06_20.5	ID18_CASS06_21.0	ID18_CASS06_21.5
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709882-011	EM1709882-012	EM1709882-013	EM1709882-014	EM1709882-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.2**	**8.2**	**8.2**	**8.2**	**8.2**
pH (Fox)	----	0.1	pH Unit	**5.4**	**6.0**	**5.7**	**5.4**	**5.4**
Reaction Rate	----	1	-	**1**	**1**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18_CASS06_22.0	----	----	----	----
			Client sampling date / time	26-Jul-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1709882-016	--------	--------	--------	--------
				Result	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**9.7**	----	----	----	----
pH (Fox)	----	0.1	pH Unit	**5.4**	----	----	----	----
Reaction Rate	----	1	-	**1**	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709882**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 28-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017
Sampler	: JR		
Site	: LXRA - Edithvale		
Quote number	: ME/235/17		
No. of samples received	: 16		
No. of samples analysed	: 16		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709882**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017
Site	: LXRA - Edithvale	Issue Date	: 28-Jul-2017
Sampler	: JR	No. of samples received	: 16
Order number	: 60506004.1.1	No. of samples analysed	: 16

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037)								
ID18_CASS06_14.5,	ID18_CASS06_15.0,	**26-Jul-2017**	**28-Jul-2017**	22-Jan-2018	✓	**28-Jul-2017**	22-Jan-2018	✓
ID18_CASS06_15.5,	ID18_CASS06_16.0,							
ID18_CASS06_16.5,	ID18_CASS06_17.0,							
ID18_CASS06_17.5,	ID18_CASS06_18.0,							
ID18_CASS06_18.5,	ID18_CASS06_19.0,							
ID18_CASS06_19.5,	ID18_CASS06_20.0,							
ID18_CASS06_20.5,	ID18_CASS06_21.0,							
ID18_CASS06_21.5,	ID18_CASS06_22.0							

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709882**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: LXRA - Edithvale		
Sampler	: JR		

Dates

Date Samples Received	: 26-Jul-2017 16:05	Issue Date	: 27-Jul-2017
Client Requested Due Date	: 02-Aug-2017	Scheduled Reporting Date	: **02-Aug-2017**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 5.1°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 16 / 16

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709882-001	26-Jul-2017 00:00	ID18_CASS06_14.5	✓
EM1709882-002	26-Jul-2017 00:00	ID18_CASS06_15.0	✓
EM1709882-003	26-Jul-2017 00:00	ID18_CASS06_15.5	✓
EM1709882-004	26-Jul-2017 00:00	ID18_CASS06_16.0	✓
EM1709882-005	26-Jul-2017 00:00	ID18_CASS06_16.5	✓
EM1709882-006	26-Jul-2017 00:00	ID18_CASS06_17.0	✓
EM1709882-007	26-Jul-2017 00:00	ID18_CASS06_17.5	✓
EM1709882-008	26-Jul-2017 00:00	ID18_CASS06_18.0	✓
EM1709882-009	26-Jul-2017 00:00	ID18_CASS06_18.5	✓
EM1709882-010	26-Jul-2017 00:00	ID18_CASS06_19.0	✓
EM1709882-011	26-Jul-2017 00:00	ID18_CASS06_19.5	✓
EM1709882-012	26-Jul-2017 00:00	ID18_CASS06_20.0	✓
EM1709882-013	26-Jul-2017 00:00	ID18_CASS06_20.5	✓
EM1709882-014	26-Jul-2017 00:00	ID18_CASS06_21.0	✓
EM1709882-015	26-Jul-2017 00:00	ID18_CASS06_21.5	✓
EM1709882-016	26-Jul-2017 00:00	ID18_CASS06_22.0	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: STANDARD

Quote # / GHD Reference:

Job Number: 3134145	GHD Contact: ALAN WILSON
Project: LXRA - EDITHVALE	
GHD Project Manager: JOESEPH HIXSON	GHD Contact: 26/7/17
GHD PM email:	GHD Contact email:

Laboratory: ALS - SPRINGVALE

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix S-Soil SL-Sludge W-Water A-Air GW-Groundwater	Container Type 1-solijar, B-bag, V-vial, G-glass bottle P-plastic bottle	Container Number	Container Volume (mL)	Analyses Required: ASS FIELD SCREEN	SAMPLE COMMENTS
1	ID18-CASS06_14.5	26/7	AM		S	B			✓	
2	_15.0								✓	
3	-15.5								✓	
4	_16.0								✓	
5	-16.5								✓	
6	_17.0								✓	
7	-17.5		↓						✓	
8	-18.0		PM						✓	
9	_18.5								✓	
10	-19.0								✓	
11	-19.5								✓	
12	-20.0								✓	
13	-20.5								✓	
14	-21.0								✓	
15	-21.5								✓	
16	-22.0	↓	↓		↓	↓			✓	

Environmental Division
Melbourne
Work Order Reference
EM1709882

Telephone : +61-3-8549 9600

TOTAL NUMBER OF SAMPLES:	16
TOTAL NUMBER OF ESKIES:	1
SAMPLES/ESKY CHILLED Y/N:	Y

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	JOSHUA RILEY		26/7/17 @
GHD SERVICE CENTRE			
COURIER	[signature] 23	26/7/17 @ 1525	
LABORATORY	[signature] (ALS)	26/7/17 1603	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709883**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017 16:05
Order number	: 60506004.1.1	Date Analysis Commenced	: 28-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017 12:20
Sampler	: JR		
Site	: Edithvale LX Removal		
Quote number	: ME/235/17		
No. of samples received	: 31		
No. of samples analysed	: 31		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS19_0.5	ID18CASS19_1	ID18CASS19_1.5	ID18CASS19_2	ID18CASS19_2.5
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709883-001	EM1709883-002	EM1709883-003	EM1709883-004	EM1709883-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**6.2**	**5.5**	**4.3**	**4.4**	**4.4**
pH (Fox)	----	0.1	pH Unit		**4.7**	**4.8**	**4.7**	**4.8**	**5.0**
Reaction Rate	----	1	-		**1**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS19_3	ID18CASS19_3.5	ID18CASS19_4	ID18CASS19_4.5	ID18CASS19_5
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709883-006	EM1709883-007	EM1709883-008	EM1709883-009	EM1709883-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**4.4**	**4.6**	**5.5**	**5.9**	**6.1**
pH (Fox)	----	0.1	pH Unit		**4.9**	**5.0**	**4.9**	**4.7**	**4.8**
Reaction Rate	----	1	-		**1**	**1**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS19_5.5	ID18CASS19_6	ID18CASS19_6.5	ID18CASS19_7	DUP2_260717
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709883-011	EM1709883-012	EM1709883-013	EM1709883-014	EM1709883-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.9**	**6.1**	**6.5**	**6.4**	**5.3**
pH (Fox)	----	0.1	pH Unit	**4.6**	**2.3**	**5.1**	**5.0**	**4.8**
Reaction Rate	----	1	-	**2**	**2**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS18_0.1	ID18CASS18_0.5	ID18CASS18_1	ID18CASS18_1.5	ID18CASS18_2
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709883-016	EM1709883-017	EM1709883-018	EM1709883-019	EM1709883-020
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**6.8**	**6.4**	**4.9**	**6.0**	**5.7**
pH (Fox)	----	0.1	pH Unit		**5.5**	**5.1**	**4.6**	**4.9**	**4.7**
Reaction Rate	----	1	-		**2**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID18CASS18_2.5	ID18CASS18_3	ID18CASS18_3.5	ID18CASS18_4	ID18CASS18_4.5
			Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709883-021	EM1709883-022	EM1709883-023	EM1709883-024	EM1709883-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.9**	**6.0**	**5.7**	**5.9**	**5.8**
pH (Fox)	----	0.1	pH Unit	**4.9**	**5.0**	**5.0**	**4.9**	**3.7**
Reaction Rate	----	1	-	**1**	**1**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS18_5	ID18CASS18_5.5	ID18CASS18_6	ID18CASS18_6.5	ID18CASS18_7
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709883-026	EM1709883-027	EM1709883-028	EM1709883-029	EM1709883-030
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.7**	**5.9**	**5.9**	**5.9**	**6.2**
pH (Fox)	----	0.1	pH Unit		**3.9**	**1.7**	**3.8**	**4.9**	**4.0**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	DUP3_260717	----	----	----	----
				Client sampling date / time	26-Jul-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1709883-031	--------	--------	--------	--------
					Result	----	----	----	----
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.9**	----	----	----	----
pH (Fox)	----	0.1	pH Unit		**4.4**	----	----	----	----
Reaction Rate	----	1	-		**2**	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM1709883**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017
Order number	: 60506004.1.1	Date Analysis Commenced	: 28-Jul-2017
C-O-C number	: ----	Issue Date	: 28-Jul-2017
Sampler	: JR		
Site	: Edithvale LX Removal		
Quote number	: ME/235/17		
No. of samples received	: 31		
No. of samples analysed	: 31		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are 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%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM1709883**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 26-Jul-2017
Site	: Edithvale LX Removal	Issue Date	: 28-Jul-2017
Sampler	: JR	No. of samples received	: 31
Order number	: 60506004.1.1	No. of samples analysed	: 31

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS (EA037)							
ID18CASS19_0.5, ID18CASS19_1, ID18CASS19_1.5, ID18CASS19_2, ID18CASS19_2.5, ID18CASS19_3, ID18CASS19_3.5, ID18CASS19_4, ID18CASS19_4.5, ID18CASS19_5, ID18CASS19_5.5, ID18CASS19_6, ID18CASS19_6.5, ID18CASS19_7, DUP2_260717, ID18CASS18_0.1, ID18CASS18_1, ID18CASS18_0.5, ID18CASS18_1.5, ID18CASS18_2, ID18CASS18_2.5, ID18CASS18_3, ID18CASS18_3.5, ID18CASS18_4, ID18CASS18_4.5, ID18CASS18_5, ID18CASS18_5.5, ID18CASS18_6, ID18CASS18_6.5, ID18CASS18_7, DUP3_260717	**26-Jul-2017**	**28-Jul-2017**	22-Jan-2018	✓	**28-Jul-2017**	22-Jan-2018	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM1709883**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: warwick.jordan@aecom.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 3134145	Page	: 1 of 3
Order number	: 60506004.1.1	Quote number	: EM2017AECGHD0001 (ME/235/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Edithvale LX Removal		
Sampler	: JR		

Dates

Date Samples Received	: 26-Jul-2017 16:05	Issue Date	: 27-Jul-2017
Client Requested Due Date	: 02-Aug-2017	Scheduled Reporting Date	: **02-Aug-2017**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 5.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 31 / 31

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis
EM1709883-001	26-Jul-2017 00:00	ID18CASS19_0.5	✓
EM1709883-002	26-Jul-2017 00:00	ID18CASS19_1	✓
EM1709883-003	26-Jul-2017 00:00	ID18CASS19_1.5	✓
EM1709883-004	26-Jul-2017 00:00	ID18CASS19_2	✓
EM1709883-005	26-Jul-2017 00:00	ID18CASS19_2.5	✓
EM1709883-006	26-Jul-2017 00:00	ID18CASS19_3	✓
EM1709883-007	26-Jul-2017 00:00	ID18CASS19_3.5	✓
EM1709883-008	26-Jul-2017 00:00	ID18CASS19_4	✓
EM1709883-009	26-Jul-2017 00:00	ID18CASS19_4.5	✓
EM1709883-010	26-Jul-2017 00:00	ID18CASS19_5	✓
EM1709883-011	26-Jul-2017 00:00	ID18CASS19_5.5	✓
EM1709883-012	26-Jul-2017 00:00	ID18CASS19_6	✓
EM1709883-013	26-Jul-2017 00:00	ID18CASS19_6.5	✓
EM1709883-014	26-Jul-2017 00:00	ID18CASS19_7	✓
EM1709883-015	26-Jul-2017 00:00	DUP2_260717	✓
EM1709883-016	26-Jul-2017 00:00	ID18CASS18_0.1	✓
EM1709883-017	26-Jul-2017 00:00	ID18CASS18_0.5	✓
EM1709883-018	26-Jul-2017 00:00	ID18CASS18_1	✓
EM1709883-019	26-Jul-2017 00:00	ID18CASS18_1.5	✓
EM1709883-020	26-Jul-2017 00:00	ID18CASS18_2	✓
EM1709883-021	26-Jul-2017 00:00	ID18CASS18_2.5	✓
EM1709883-022	26-Jul-2017 00:00	ID18CASS18_3	✓
EM1709883-023	26-Jul-2017 00:00	ID18CASS18_3.5	✓
EM1709883-024	26-Jul-2017 00:00	ID18CASS18_4	✓
EM1709883-025	26-Jul-2017 00:00	ID18CASS18_4.5	✓
EM1709883-026	26-Jul-2017 00:00	ID18CASS18_5	✓
EM1709883-027	26-Jul-2017 00:00	ID18CASS18_5.5	✓
EM1709883-028	26-Jul-2017 00:00	ID18CASS18_6	✓
EM1709883-029	26-Jul-2017 00:00	ID18CASS18_6.5	✓
EM1709883-030	26-Jul-2017 00:00	ID18CASS18_7	✓
EM1709883-031	26-Jul-2017 00:00	DUP3_260717	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

ALAN WILSON

- *AU Certificate of Analysis - NATA (COA)	Email	alan.wilson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alan.wilson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alan.wilson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alan.wilson@ghd.com
- A4 - AU Tax Invoice (INV)	Email	alan.wilson@ghd.com
- Chain of Custody (CoC) (COC)	Email	alan.wilson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	alan.wilson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	alan.wilson@ghd.com

JOSEPH HIXSON

- *AU Certificate of Analysis - NATA (COA)	Email	joseph.hixson@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	joseph.hixson@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	joseph.hixson@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	joseph.hixson@ghd.com
- Chain of Custody (CoC) (COC)	Email	joseph.hixson@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	joseph.hixson@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	joseph.hixson@ghd.com

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround: Standard

Quote # / GHD Reference:

Job Number: 31341145	GHD Contact: A. Wilson
Project: Edithvale Lx Removal	
GHD Project Manager: J. Hixon	GHD Contact: A. Wilson
GHD PM email	GHD Contact email

Laboratory: ALS
Address: Springvale
Laboratory Contact: Shirley

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D.	Date	Time	Composite Sample	Sample Matrix: S: Soil, SL: Sludge, W: Water, A: Air, GW: Groundwater	Container Type: B: bag, V: vial, G: glass bottle, P: plastic bottle	Container Number	Container Volume (mL)	Analyses Required: As, Field screen	SAMPLE COMMENTS
1	1D18CASS9_0.5	26/7/17	Am		S	B			✓	
2	1								✓	
3	1.5								✓	
4	2								✓	
5	2.5								✓	
6	3								✓	
7	3.5								✓	
8	4								✓	
9	4.5								✓	
10	5								✓	
11	5.5								✓	
12	6								✓	
13	6.5								✓	
14	7								✓	
15	DUP2-26/7/17								✓	
16	1D18CASS18_0.1		Pm						✓	
17	" " 0.5		1						✓	

Environmental Division
Melbourne
Work Order Reference
EM1709883

Telephone : + 61-3-9549 9600

TOTAL NUMBER OF SAMPLES:	GENERAL COMMENTS:
TOTAL NUMBER OF ESKIES:	
SAMPLES/ESKY CHILLED? Y / N	

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	ADW 26/7/17		
GHD SERVICE CENTRE			
COURIER	[illegible]	26/07/17 1525	
LABORATORY	Isaac Barkla (ALS)	26/7/17 1605	

CHAIN OF CUSTODY RECORD

GHD

Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround:

Quote # / GHD Reference:

Job Number	GHD Contact
Project	
GHD Project Manager	GHD Contact
GHD PM email	GHD Contact email

Laboratory:

Address:

Laboratory Contact:

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact** to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white** copy with results.
Pink copy is returned to the sampler once the courier has signed for the samples.
E-mail results to the **GHD Project Manager** and **GHD Contact** with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

	Sample I.D	Date	Time	Composite Sample	Sample Matrix (S: Soil, SL: Sludge, W: Water, A: Air, GW: Groundwater)	Container Type (J: soil jar, B: bag, V: vial, G: Glass bottle, P: Plastic bottle)	Container Number	Container Volume (mL)	Analyses Required: Ass field screen	SAMPLE COMMENTS
18	DD18C.AS518-1	26/7/17	pm		S	B			✓	
19	1.5								✓	
20	2								✓	
21	2.5								✓	
22	3								✓	
23	3.5								✓	
24	4								✓	
25	4.5								✓	
26	5								✓	
27	5.5								✓	
28	6								✓	
29	6.5								✓	
30	7								✓	
31	DU83-260717								✓	

TOTAL NUMBER OF SAMPLES:

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED? Y / N

GENERAL COMMENTS:

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER			
GHD SERVICE CENTRE			
COURIER			
LABORATORY	Isaac Lamb (ALS)	26/7/17 1605	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1709899**	Page	: 1 of 16
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: WARWICK JORDAN	Contact	: Shirley LeCornu
Address	: Level 10, Tower Two, 727 Collins St Melbourne Victoria 3008	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 3134145	Date Samples Received	: 27-Jul-2017 09:35
Order number	: 60506004.1.1	Date Analysis Commenced	: 27-Jul-2017
C-O-C number	: ----	Issue Date	: 01-Aug-2017 11:13
Sampler	: ADW		
Site	: Edithvale LX		
Quote number	: ME/235/17		
No. of samples received	: 22		
No. of samples analysed	: 22		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Jars received with significant headspace. Volatile organics may be compromised as a result.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS17_0.1	ID18CASS17_0.5	ID18CASS17_1	ID18CASS17_1.5	ID18CASS17_2
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-001	EM1709899-002	EM1709899-003	EM1709899-004	EM1709899-005
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**7.0**	**5.5**	**4.9**	**6.4**	**5.5**
pH (Fox)	----	0.1	pH Unit		**5.3**	**4.9**	**4.9**	**4.4**	**3.8**
Reaction Rate	----	1	-		**2**	**2**	**1**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS17_2.5	ID18CASS17_3	ID18CASS17_3.5	ID18CASS17_4	ID18CASS17_4.5
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-006	EM1709899-007	EM1709899-008	EM1709899-009	EM1709899-010
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**5.2**	**6.1**	**6.4**	**6.1**	**8.0**
pH (Fox)	----	0.1	pH Unit		**3.8**	**4.3**	**5.1**	**5.1**	**5.3**
Reaction Rate	----	1	-		**2**	**1**	**1**	**1**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID18CASS17_5	ID18CASS17_5.5	ID18CASS17_6	ID18CASS17_6.5	ID18CASS17_7
				Client sampling date / time	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00	26-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-011	EM1709899-012	EM1709899-013	EM1709899-014	EM1709899-015
					Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis									
pH (F)	----	0.1	pH Unit		**7.2**	**6.4**	**6.6**	**7.9**	**8.0**
pH (Fox)	----	0.1	pH Unit		**5.8**	**2.2**	**2.1**	**1.8**	**5.7**
Reaction Rate	----	1	-		**2**	**2**	**2**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS06_0.1	ID46CASS06_0.5	ID46CASS06_1	ID46CASS06_1.5	DUP1_270717
			Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00
Compound	CAS Number	LOR	Unit	EM1709899-016	EM1709899-017	EM1709899-018	EM1709899-019	EM1709899-020
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	**4.9**	----	**5.3**	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.8**	**6.5**	**5.7**	**5.2**	**5.1**
pH (Fox)	----	0.1	pH Unit	**5.0**	**5.1**	**4.7**	**4.8**	**4.6**
Reaction Rate	----	1	-	**2**	**2**	**2**	**1**	**1**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**6.0**	----	<1.0	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	<5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	----	----
Copper	7440-50-8	5	mg/kg	**24**	----	<5	----	----
Lead	7439-92-1	5	mg/kg	**63**	----	**6**	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	**5**	----	----
Nickel	7440-02-0	2	mg/kg	**3**	----	<2	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	<5	----	----
Silver	7440-22-4	2	mg/kg	<2	----	<2	----	----
Tin	7440-31-5	5	mg/kg	<5	----	<5	----	----
Zinc	7440-66-6	5	mg/kg	**27**	----	<5	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	<1	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	**60**	----	<40	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS06_0.1	ID46CASS06_0.5	ID46CASS06_1	ID46CASS06_1.5	DUP1_270717
				Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-016	EM1709899-017	EM1709899-018	EM1709899-019	EM1709899-020
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	<0.4	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	<0.02	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	<0.01	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	<0.02	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	<0.01	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	<0.02	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	<0.02	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	<0.02	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS06_0.1	ID46CASS06_0.5	ID46CASS06_1	ID46CASS06_1.5	DUP1_270717
				Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-016	EM1709899-017	EM1709899-018	EM1709899-019	EM1709899-020
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	<1	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	<1	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	<5	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	<5	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	<5	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS06_0.1	ID46CASS06_0.5	ID46CASS06_1	ID46CASS06_1.5	DUP1_270717
				Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-016	EM1709899-017	EM1709899-018	EM1709899-019	EM1709899-020
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS06_0.1	ID46CASS06_0.5	ID46CASS06_1	ID46CASS06_1.5	DUP1_270717
				Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00	27-Jul-2017 00:00
Compound	CAS Number	LOR	Unit		EM1709899-016	EM1709899-017	EM1709899-018	EM1709899-019	EM1709899-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		83.1	----	102	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		75.1	----	77.4	----	----
Toluene-D8	2037-26-5	0.1	%		75.1	----	78.8	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		86.2	----	83.9	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		115	----	110	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		107	----	114	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		98.7	----	96.0	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		94.6	----	96.7	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		106	----	115	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		118	----	127	----	----
Anthracene-d10	1719-06-8	0.025	%		106	----	119	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		117	----	133	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS06_0.3	DUP2_270717	----	----	----
			Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1709899-021	EM1709899-022	--------	--------	--------
				Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	**5.8**	**5.8**	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**1.9**	**1.7**	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg	**16**	**16**	----	----	----
Lead	7439-92-1	5	mg/kg	**17**	**20**	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg	**14**	**11**	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg	**24**	**25**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	**60**	**70**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS06_0.3	DUP2_270717	----	----	----
			Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1709899-021	EM1709899-022	--------	--------	--------
				Result	Result	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	----	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	----	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	----	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	----	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS06_0.3	DUP2_270717	----	----	----
				Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1709899-021	EM1709899-022	--------	--------	--------
					Result	Result	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	----	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	----	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	----	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	----	----	----
^ **Sum of Phenols (non-halogenated)**	----	1	mg/kg		<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	----	----	----
EP075I: Organochlorine Pesticides									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ID46CASS06_0.3	DUP2_270717	----	----	----
			Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1709899-021	EM1709899-022	--------	--------	--------
				Result	Result	----	----	----
EP075l: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	ID46CASS06_0.3	DUP2_270717	----	----	----
				Client sampling date / time	27-Jul-2017 00:00	27-Jul-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1709899-021	EM1709899-022	--------	--------	--------
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**70.0**	**99.4**	----	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**82.6**	**85.1**	----	----	----
Toluene-D8	2037-26-5	0.1	%		**76.4**	**87.4**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**89.2**	**88.7**	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		**101**	**105**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**101**	**108**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**83.5**	**87.8**	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		**85.9**	**88.5**	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**104**	**107**	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		**116**	**117**	----	----	----
Anthracene-d10	1719-06-8	0.025	%		**106**	**107**	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		**120**	**121**	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2.4.6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1.2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141