

20 December 2013  
Project No. 42213719

Darwin Waterfront Corporation  
Ground Floor  
Level 5, 7 Kitchener Drive  
Darwin NT 0800

Attention: John Kassaras

Dear John

**Subject: Classification of Hydrocarbon Impacted Stockpiled Material for Potential On-Site Disposal - Stage 2A**

### ***Introduction***

URS Australia Pty Ltd (URS) has been requested by Darwin Waterfront Corporation (DWC) to provide a letter report on the status of hydrocarbon impacted material excavated during the construction works at Darwin Waterfront Stage 2A (the Site).

Hydrocarbon impacts were observed during excavation of the Stage 2A basement. URS supervised the excavation of hydrocarbon impacted soil to an extent where indication of hydrocarbon impact (odours and staining) were no longer detected and to at least 1 m below the finished Stage 2A basement reduced level. The hydrocarbon impacted spoil was stockpiled separately in the stockpile management area. Following excavation of the impacted material, URS undertook sampling of the stockpile. Initial excavation and sampling works occurred on 11 January 2013. The stockpile was then turned during land-farming on two occasions and was resampled on 4 June 2013 and 22 August 2013. The objective of the resampling was to classify the land farmed material for potential on-site reuse, as per site specific acceptance criteria, or for off-site disposal, as per Northern Territory Waste Classification Guidelines.

### ***Methodology***

In August 2013 approximately 60-70 m<sup>3</sup> of impacted spoil material was stockpiled in the south western corner of the stockpile management area, within the former acid tank bunded area. The stockpile has been sampled on three separate occasions including 11 January, 4 June and 22 August 2013. On 11 January 2013 three samples were analysed from the stockpile. Additionally, three primary samples and one field duplicate/triplicate pair were analysed on 4 June 2013 and three were analysed on 22 August 2013. A total of nine primary samples, one field duplicate and one field triplicate sample was analysed over the three occasions. The approximate sampling rate on each of the three occasions was 1 sample per 20-25 m<sup>3</sup> of bulked out spoil.

Samples from the stockpile were collected with the assistance of a 5 T excavator to cut representative cross sections through the stockpile profile. Samples were then collected by hand from the excavator bucket, using dedicated nitrile gloves for each sample, and placed into laboratory supplied jars for

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transport to the laboratory. Standard environmental protocols were followed with respect to sample collection, transport and laboratory analyses included quality assurance/quality control samples to enable URS's assessment of the suitability of the data for interpretive use.

Soil analytical results have been compared against the following guidelines for assessment of material for on-site reuse and off-site disposal, as summarised in **Attachment A**:

- The site specific acceptance criteria (URS RAP V6 9<sup>th</sup> August 2005) based on National Environment Protection (Assessment of Site Contamination) Measure – Health Based Investigation Levels (NEPM, 1999) – HILs E and F and Ecological Intervention Levels (EILs); and Dutch Intervention Criteria (2000), and
- The "NT Waste Classification Guidelines" adopted from NSW DECCW Waste Classification Guidelines (2008).

### **Laboratory Results**

The laboratory results are summarised and assessed against the relevant on-site re-use and off-site disposal criteria in **Attachment A**. Laboratory analytical reports and chain of custody (COC) documentation are provided as **Attachment B**.

**Table 1 On-Site Reuse Criteria\* – Site Specific Acceptance Criteria**

<b>Analyte</b>	<b>Class 1 Criteria</b>	<b>Class 2A Criteria</b>	<b># of Primary Samples</b>	<b># &gt;LOR</b>	<b># &gt; Guideline</b>
Benzene	1	1	9	0	0
Toluene	1.4	1.4	9	1	0
Ethylbenzene	3.1	3.1	9	1	0
Xylenes	14	14	9	1	1
TPH C <sub>6</sub> -C <sub>9</sub>	65	530	9	2	0
TPH C <sub>10</sub> -C <sub>14</sub>	-	855	9	2	0
TPH C <sub>10</sub> -C <sub>36</sub>	1000	1000	9	2	0
Arsenic	20	200	9	8	1
Barium	300	-	9	9	0
Beryllium	-	40	9	1	0
Cadmium	3	40	9	1	0
Cobalt	-	200	9	9	0
Copper	100	2,000	9	9	1
Lead	600	600	9	9	0
Manganese	500	3,000	9	9	0
Mercury	1	30	9	1	0
Nickel	60	600	9	9	0
Vanadium	50	-	9	9	7
Zinc	200	14,000	9	9	0

\*On-Site Reuse – Site Specific Acceptance Criteria (URS RAP V6 – 9 August 2005)

Individual sample results exceeded the site specific Class 1 guidelines for total xylenes, arsenic and copper. Nine individual sample results exceeded the site specific Class 1 guidelines.

The exceedance of vanadium is considered indicative of background concentrations based on no historical handling of vanadium at the site. Exceedance of the guideline was noted in seven out of nine primary samples analysed for vanadium, and the individual samples are within the range that is considered background based on the "National Environment Protection (Assessment of Site Contamination) Measure [NEPM], Schedule B(1), "Investigation Levels for Soil and Groundwater" document (background range 20 to 500 mg/kg).

The exceedance of total xylenes was reported in the initial round of sampling in January 2013 prior to land farming works. Following land farming total xylenes were reported less than the LOR in the successive sampling rounds in June and August 2013.

The exceedance of copper was reported marginally greater than the NEPM background range of 2 to 100 mg/kg. Due to the marginal exceedance in one out of nine samples over 3 sampling events reporting an exceedance the result is not considered representative of broader copper impact.

**Table 2 Off-Site Disposal Criteria – NT Waste Classification Guidelines**

Analyte	NT Waste Classification Guideline (No Leach)	# of Primary Samples	# >LOR	# > Guideline
Benzene	10	9	0	0
Toluene	288	9	1	0
Ethylbenzene	600	9	1	0
Xylenes	1,000	9	1	0
TPH C <sub>6</sub> -C <sub>9</sub>	-	9	2	NA
TPH C <sub>10</sub> -C <sub>14</sub>	-	9	2	NA
TPH C <sub>10</sub> -C <sub>36</sub>	-	9	2	NA
Arsenic	100	9	8	0
Barium	-	9	9	NA
Beryllium	20	9	1	0
Cadmium	20	9	1	0
Chromium	-	9	9	NA
Cobalt	-	9	9	NA
Copper	-	9	9	NA
Lead	100	9	9	0
Manganese	-	9	9	NA
Mercury	4	9	1	0
Nickel	40	9	9	0
Vanadium	-	9	9	NA
Zinc	-	9	9	NA

No individual sample results exceeded the NT Waste Classification guidelines for the following analytes (**Table 2**):

- Benzene;
- Toluene;
- Ethylbenzene;
- Xylenes;
- Arsenic;
- Beryllium;
- Cadmium;
- Lead;
- Mercury; and
- Nickel.

There was no applicable NT Waste Classification guideline value for the following analytes:

- TPH C<sub>6</sub>-C<sub>9</sub>;
- TPH C<sub>10</sub>-C<sub>14</sub>;
- TPH C<sub>10</sub>-C<sub>36</sub>;
- Barium;
- Chromium;
- Cobalt;
- Copper;
- Manganese;
- Vanadium; and
- Zinc.

#### **Data Validation**

URS has undertaken a review of the laboratory analytical results and considers the data acceptable for interpretive use as described in **Attachment C**.

#### **Conclusion and Recommendation**

The impacted stockpiled material resultant from the Stage 2A basement excavation has been characterised based on the results of the field observations, sampling and analysis conducted by URS as presented in the attached tables.

Individual sample results exceeded the site specific Class 1 guidelines for xylenes, arsenic, copper, and vanadium during the initial stockpile sampling round in January 2013. No exceedances of hydrocarbon constituents were reported in the June and August sampling rounds following land-farming works. Vanadium was also reported exceeding Class 1 guidelines in the June and August rounds. Vanadium results were widespread and are considered to be within the range of background concentrations.

Based on the analytical results for samples collected from the hydrocarbon impacted material from January to August 2013 it is considered that land farming of this material has reduced concentrations of hydrocarbon impact. However on the basis that the material may not be aesthetically suitable for

unrestricted re-use at the site (potential for hydrocarbon odours and staining), the material is classified as Class 2A as per the site specific acceptance criteria for on-site reuse as detailed in the RAP (URS 9 August 2005).

On the basis of the analytical results for samples collected from the stockpile at a rate of at least 1:20-25 m<sup>3</sup>, the stockpiled material is classified as General Solid Waste as per the NT Waste Classification guidelines.

#### **Classification and volume of assessed material**

Estimated Volume and Tonnage	60-70 m <sup>3</sup>	108-126 T
Classification On-Site Reuse	Class 2A	
Classification Off-Site Disposal	General solid waste	

URS notes that this letter and the attached information is intended to support the process of on-site reuse or off-site disposal of the described soils to a suitable end-point. URS does not provide any recommendation or endorsement with respect to disposal of this material to any site; responsibility for accepting material to a third party site shall be the onus of the owner of that site.

#### **Limitations**

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Darwin Waterfront Corporation (DWC). A complete or partial copy of the report may only be provided by DWC to the EPA (Victoria) accredited Environmental Auditor (Contaminated Land) appointed by DWC to the project and to developers and contractors (Interested Parties) working on the Darwin Waterfront Redevelopment Project if the entire limitations statement of this report is included in the complete or partial copy of this report. Whilst URS does not admit that any action may exist or be available to any Interested Party, this report may only be relied on by an Interested Party with the written consent of DWC and on the basis that subject to any law the terms of which cannot be excluded or modified by agreement:

- (i) The maximum amount payable (if any) by URS to Interested Parties or any party claiming through an Interested Party in aggregate, whether in contract, tort or otherwise, in relation to claims, damages, liabilities, losses or expenses, under or in any way related to this report and/or its appendices or the services performed by URS to prepare the Report, shall be A\$2,000,000; and
- (ii) If there is more than one Interested Party, the maximum amount payable to any and all Interested Parties in total shall be A\$2,000,000.

Except as specifically stated in this limitations statement, this report may not be used by any third party.

This report is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the proposal dated 24 August 2006 and subsequent requests for this specific task in an email dated 17 December 2012.

The methodology adopted and sources of information used by URS are outlined in this report. Where this report indicates that information has been provided to URS by third parties, URS has made no independent verification of this information except as expressly stated in this report. No indications

were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between 6 August 2013 and 20 December 2013, and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

We trust that the information detailed within this letter informs your requirements. Should you require further assistance please contact the undersigned.

Yours sincerely  
**URS Australia Pty Ltd**



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Philippa Scott  
Environmental Scientist



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Tim Smith  
Senior Environmental Geologist

**Attachments**

Attachment A Summary of Analytical Results

Attachment B Laboratory reports and Chain of Custody Forms

Attachment C Data Validation

## Attachment A

Analytical Results - January, June and August 2013  
Waterfront Stage 2A - Waterfront Stage 2A  
Darwin Waterfront Corporation

Chemistry Group	Analyte	Units	EQL	CT1	Class 1	Class 2A	Class 2B												
Inorganics	Moisture Content	%		1				39.3	47.5	19.5	15.6	14.1	11	23.3	12.8	17.4	19.8	14.5	
BTEXN	Benzene	mg/kg	0.2	10	1	1	1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
	Ethylbenzene	mg/kg	0.5	600	3.1	3.1	3.1	<0.5	2.7	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	
	m&p-Xylene	mg/kg	0.5					<0.5	13.6	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	
	Naphthalene (VOC)	mg/kg	1					-	-	-	<1	<1	-	<1	<1	<1	<1	<1	
	o-Xylene	mg/kg	0.5					<0.5	0.9	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Toluene	mg/kg	0.5	288	1.4	1.4	1.4	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Total BTEX	mg/kg	0.2					-	18.2	-	-	-	-	-	-	<0.2	<0.2	<0.2	
	Total Xylenes	mg/kg	0.5	1000	14	14	14	<0.5	14.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
Metals	Arsenic	mg/kg	5	100	20	200	500	21	10	6	<5	5	7	5	<5	6	<5	6	
	Barium	mg/kg	10		300			10	300	70	90	90	67	80	100	80	100	140	
	Beryllium	mg/kg	1	20	40	100		1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	Cadmium	mg/kg	1	20	3	40	100	<1	<1	<1	<1	<1	0.8	<1	<1	<1	<1	<1	
	Chromium	mg/kg	2					50	18	38	40	30	38	32	30	31	42	30	
	Chromium (hexavalent)	mg/kg	0.5	100	1	200	500	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Cobalt	mg/kg	2		200	500		14	7	4	2	2	3	3	5	2	2	2	
	Copper	mg/kg	5		100	2000	5000	10	134	37	33	34	38	89	30	28	36	44	
	Lead	mg/kg	5	100	600	600	1500	16	92	34	62	73	88	63	38	50	27	63	
	Manganese	mg/kg	5		500	3000	7500	118	195	153	124	94	120	121	277	130	140	171	
	Mercury	mg/kg	0.1	4	1	30	75	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
	Nickel	mg/kg	2	40	60	600	3000	17	10	13	5	5	8	6	5	9	8	8	
	Vanadium	mg/kg	5		50			71	42	62	60	63	60	54	43	59	54	54	
	Zinc	mg/kg	5		200	14000	35000	30	164	102	120	131	150	129	86	94	96	148	
Organochlorine Pesticides (OC)	a-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Aldrin	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	b-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	cis-Chlordane	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	trans-Chlordane	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	d-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	DDD	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	DDE	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	DDT	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	
	Dieldrin	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Endosulfan 1	mg/kg	0.05	60				<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Endosulfan 2	mg/kg	0.05	60				<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Endosulfan sulfate	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Endrin	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Endrin aldehyde	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Endrin ketone	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	
	g-BHC (Lindane)	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Heptachlor	mg/kg	0.05		2	20	50	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Heptachlor epoxide	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Hexachlorobenzene (HCB)	mg/kg	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
	Methoxychlor	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	
	Phenolic Compounds	2,4,5-Trichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
		2,4,6-Trichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
		2,4-Dichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol		mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
2,6-Dichlorophenol		mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Chlorophenol		mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Methylphenol (o-Cresol)		mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Nitrophenol		mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
3-&4-Methylphenol (m&p-Cresol)		mg/kg	1					<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	
4-Chloro-3-methylphenol		mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
Pentachlorophenol		mg/kg	2					<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2	
Phenol		mg/kg	0.5	288	17000	42500		<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
Sum of Phenols		mg/kg	5					-	-	-	-	-	<5	-	-	-	-	-	
Polychlorinated Biphenyls		Arochlor 1016	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-
	Arochlor 1221	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-	
	Arochlor 1232	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-	
	Arochlor 1242	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-	
	Arochlor 1248	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-	
	Arochlor 1254	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-	
	Arochlor 1260	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	-	-	-	
	Polychlorinated Biphenyls	mg/kg	0.1		10	20	50	<0.1	<0.1	1	<0.1	<0.1	-	<0.1	0.2	<0.1	<0.1	<0.1	
Polynuclear Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Acenaphthylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Anthracene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benz(a)anthracene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(a)pyrene	mg/kg	0.5	0.8	1	2	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(a)pyrene TEQ	mg/kg	0.5					-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(b&k)fluoranthene	mg/kg	0.2					-	-	-	-	-	<0.2	-	-	-	-	-	
	Benzo(b)fluoranthene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(g,h,i)perylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(k)fluoranthene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	
	Chrysene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dibenz(a,h)anthracene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Fluoranthene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Fluorene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5	3000				<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Naphthalene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Phenanthrene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	
	Pyrene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5					




## Attachment B

# CHAIN OF CUSTODY

<b>URS Australia</b> 3/93 Mitcheil St Darwin 800 02 8980 2900 08 8941 3920		<b>LABORATORY:</b> ADDRESS: 277-289 Woodpark Rd Smithfield, NSW, 2164 02 8784 8555 02 8784 8500		All results to be provided in MEd format email address: tim.smith@urs.com bek.aagaard@urs.com darwin@urscorp.com	
<b>PROJECT NAME:</b> SHRETTING WATERBENT 42313-07-0061 42313-07-0061		<b>PROJECT MANAGER:</b> Tim Smith		<b>PURCHASE ORDER NUMBER:</b>	
<b>PROJECT NO:</b>		<b>SAMPLERS:</b>		<b>SIGNED:</b> <i>Bek Aagaard</i>	
<b>COMMENTS:</b> Updated COC -					

SAMPLE ID	DATE	MATRIX	SITE	LOCATION	CONTAINER TYPE & PRESERVATIVE	TOTAL NUMBER OF CONTAINERS	ANALYSIS REQUIRED										HOLD			
							LAB OF ORIGIN: DARWIN													
ExE001-11/1/13	11/1/2013	Soil	WATERFRONT	Contamination	GLASS JAR	1														
ExE002-11/1/13			STAGE 2A	in Excavation		1														
ExE003-11/1/13						1														
ExE004-11/1/13						1														
ExE005-11/1/13						1														
ExE006-11/1/13						1														
ExE007-11/1/13						1														
ExE008-11/1/13						1														
QC01						1														
ExBot01-11/1/13						1														
ExBot02-11/1/13						1														
ExBot03-11/1/13						1														
Ex01-11/1/13-02						1														
Ex01-11/1/13-07						1														
Ex01-11/1/13-06						1														
TOTAL NO:						15														

Environmental Division  
Sydney  
Work Order  
**ES1300953**



Telephone : +61-2-8784 8555

Environmental Division  
 Sydney  
 Work Order  
**ES1300953**

Telephone : +61-2-8784 8555

PLEASE SIGN AND FAX TO URS UPON RECEIPT

RECEIVED BY: *[Signature]*  
 DATE: 15/1/13  
 TIME: 2:30 PM

RECEIVED BY: *[Signature]*  
 DATE: 15/1/13  
 TIME: 2:30 PM

## Environmental Division

# SAMPLE RECEIPT NOTIFICATION (SRN)

## Comprehensive Report

<b>Work Order</b>	<b>: ES1300953</b>		
<b>Client</b>	<b>: URS AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MR TIM SMITH</b>	<b>Contact</b>	<b>: Client Services</b>
<b>Address</b>	<b>: G P O BOX 2005</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield</b>
	<b>DARWIN NT, AUSTRALIA 0801</b>		<b>NSW Australia 2164</b>
<b>E-mail</b>	<b>: tim.smith@urs.com</b>	<b>E-mail</b>	<b>: sydney@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 89802900</b>	<b>Telephone</b>	<b>: +61-2-8784 8555</b>
<b>Facsimile</b>	<b>: +61 89413920</b>	<b>Facsimile</b>	<b>: +61-2-8784 8500</b>
<b>Project</b>	<b>: WATERFRONT 42213719 70061</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: ----</b>	<b>Quote number</b>	<b>: ES2012URSNT0270 (EN/001/12)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 1999 Schedule B(3) and ALS</b>
<b>Site</b>	<b>: ----</b>		<b>QCS3 requirement</b>
<b>Sampler</b>	<b>: BA</b>		

### Dates

<b>Date Samples Received</b>	<b>: 22-JAN-2013</b>	<b>Issue Date</b>	<b>: 22-JAN-2013 14:45</b>
<b>Client Requested Due Date</b>	<b>: 29-JAN-2013</b>	<b>Scheduled Reporting Date</b>	<b>: 29-JAN-2013</b>

### Delivery Details

<b>Mode of Delivery</b>	<b>: Carrier</b>	<b>Temperature</b>	<b>: 10.5°C - Ice present</b>
<b>No. of coolers/boxes</b>	<b>: 1 HARD</b>	<b>No. of samples received</b>	<b>: 15</b>
<b>Security Seal</b>	<b>: Intact.</b>	<b>No. of samples analysed</b>	<b>: 15</b>

### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exist.

## 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - P-13/1 (ES) NEPM Table 5A (Sydney Lab)
ES1300953-001	11-JAN-2013 15:00	EXE001_11/1/13	✓
ES1300953-002	11-JAN-2013 15:00	EXE002_11/1/13	✓
ES1300953-003	11-JAN-2013 15:00	EXE003_11/1/13	✓
ES1300953-004	11-JAN-2013 15:00	EXE004_11/1/13	✓
ES1300953-005	11-JAN-2013 15:00	EXE005_11/1/13	✓
ES1300953-006	11-JAN-2013 15:00	EXE006_11/1/13	✓
ES1300953-007	11-JAN-2013 15:00	EXE007_11/1/13	✓
ES1300953-008	11-JAN-2013 15:00	EXE008_11/1/13	✓
ES1300953-009	11-JAN-2013 15:00	QC01	✓
ES1300953-010	11-JAN-2013 15:00	EXB0T01_11/1/13	✓
ES1300953-011	11-JAN-2013 15:00	EXB0T02_11/1/13	✓
ES1300953-012	11-JAN-2013 15:00	EXB0T03_11/1/13	✓
ES1300953-013	11-JAN-2013 15:00	EX01_11/1/13_02	✓
ES1300953-014	11-JAN-2013 15:00	EX01_110113_07	✓
ES1300953-015	11-JAN-2013 15:00	EX01_110113_06	✓

## Proactive Holding Time Report

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

[illegible]

## Environmental Division

# CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1300953</b>	Page	: 1 of 15
Client	: <b>URS AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: MR TIM SMITH	Contact	: Client Services
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: tim.smith@urs.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61-2-8784 8555
Facsimile	: +61 89413920	Facsimile	: +61-2-8784 8500
Project	: WATERFRONT 42213719 70061	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 22-JAN-2013
C-O-C number	: ----	Issue Date	: 29-JAN-2013
Sampler	: BA	No. of samples received	: 15
Site	: ----	No. of samples analysed	: 15
Quote number	: EN/001/12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



## 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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

- **EG048G: Spike failed for Hexavalent Chromium analysis due to matrix interferences**
- **EP066 : Particular samples # EXB0T01\_11/1/13 , # EXB0T02\_11/1/13 and # EX01\_110113\_07 suspected alochlor 1254 positive PCB.Confirmed by reextraction and reanalysis.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Nanthini Coilparampil	Laboratory Manager - Inorganics	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
		Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE001_11/1/13	EXE002_11/1/13	EXE003_11/1/13	EXE004_11/1/13	EXE005_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-001	ES1300953-002	ES1300953-003	ES1300953-004	ES1300953-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.8	16.7	19.7	20.2	19.7
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	6	----	----	----
Barium	7440-39-3	10	mg/kg	10	20	20	10	40
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	83	----	----	----
Cobalt	7440-48-4	2	mg/kg	<2	3	2	2	3
Copper	7440-50-8	5	mg/kg	----	15	----	----	----
Lead	7439-92-1	5	mg/kg	----	11	----	----	----
Manganese	7439-96-5	5	mg/kg	84	218	126	139	184
Nickel	7440-02-0	2	mg/kg	----	13	----	----	----
Vanadium	7440-62-2	5	mg/kg	72	80	45	60	26
Zinc	7440-66-6	5	mg/kg	----	27	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	----	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	31	----	30	42	27
Copper	7440-50-8	5	mg/kg	9	----	25	15	23
Lead	7439-92-1	5	mg/kg	6	----	8	<5	12
Nickel	7440-02-0	2	mg/kg	8	----	11	7	11
Zinc	7440-66-6	5	mg/kg	14	----	40	25	30
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE001_11/1/13	EXE002_11/1/13	EXE003_11/1/13	EXE004_11/1/13	EXE005_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-001	ES1300953-002	ES1300953-003	ES1300953-004	ES1300953-005
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE001_11/1/13	EXE002_11/1/13	EXE003_11/1/13	EXE004_11/1/13	EXE005_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-001	ES1300953-002	ES1300953-003	ES1300953-004	ES1300953-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEX</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<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	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE001_11/1/13	EXE002_11/1/13	EXE003_11/1/13	EXE004_11/1/13	EXE005_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-001	ES1300953-002	ES1300953-003	ES1300953-004	ES1300953-005
<b>EP080: BTEX - Continued</b>								
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080: BTEXN</b>								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	98.4	90.4	98.1	97.3	92.9
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	105	98.0	105	102	98.4
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	119	106	119	110	109
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	88.3	87.1	85.5	93.4	90.8
2-Chlorophenol-D4	93951-73-6	0.1	%	86.0	83.0	84.5	86.0	88.2
2,4,6-Tribromophenol	118-79-6	0.1	%	95.4	105	93.9	109	96.9
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	90.1	92.2	89.7	96.3	92.0
Anthracene-d10	1719-06-8	0.1	%	84.8	81.7	80.3	86.2	83.5
4-Terphenyl-d14	1718-51-0	0.1	%	93.2	115	118	123	118
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	112	112	104	99.4	99.3
Toluene-D8	2037-26-5	0.1	%	106	102	99.0	104	107
4-Bromofluorobenzene	460-00-4	0.1	%	107	94.0	100	100	101



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE006_11/1/13	EXE007_11/1/13	EXE008_11/1/13	QC01	EXB0T01_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-006	ES1300953-007	ES1300953-008	ES1300953-009	ES1300953-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.9	24.3	16.2	17.0	22.2
<b>EG005T: Total Metals by ICP-AES</b>								
Barium	7440-39-3	10	mg/kg	40	30	50	70	70
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Cobalt	7440-48-4	2	mg/kg	2	2	2	3	5
Manganese	7439-96-5	5	mg/kg	220	211	104	79	123
Vanadium	7440-62-2	5	mg/kg	20	16	46	66	51
Arsenic	7440-38-2	5	mg/kg	<5	<5	6	6	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	17	22	38	28
Copper	7440-50-8	5	mg/kg	27	15	26	27	43
Lead	7439-92-1	5	mg/kg	22	16	42	39	33
Nickel	7440-02-0	2	mg/kg	9	9	8	11	11
Zinc	7440-66-6	5	mg/kg	44	22	190	130	96
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	1.1
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE006_11/1/13	EXE007_11/1/13	EXE008_11/1/13	QC01	EXB0T01_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-006	ES1300953-007	ES1300953-008	ES1300953-009	ES1300953-010
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE006_11/1/13	EXE007_11/1/13	EXE008_11/1/13	QC01	EXB0T01_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-006	ES1300953-007	ES1300953-008	ES1300953-009	ES1300953-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	410
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	410
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	<10	<10	<10	<10	24
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg	<10	<10	<10	<10	24
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	430
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	430
<b>EP080: BTEX</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<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	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080: BTEXN</b>								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	98.4	96.8	96.9	94.7	82.0



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXE006_11/1/13	EXE007_11/1/13	EXE008_11/1/13	QC01	EXB0T01_11/1/13
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-006	ES1300953-007	ES1300953-008	ES1300953-009	ES1300953-010
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	101	104	100	99.7	90.6
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	113	108	108	113	96.4
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	89.6	81.1	88.5	88.6	84.1
2-Chlorophenol-D4	93951-73-6	0.1	%	81.4	73.4	78.9	89.2	82.1
2,4,6-Tribromophenol	118-79-6	0.1	%	98.5	97.8	118	107	103
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	89.7	84.0	86.7	95.7	92.7
Anthracene-d10	1719-06-8	0.1	%	81.6	78.5	83.1	83.1	79.7
4-Terphenyl-d14	1718-51-0	0.1	%	119	119	119	118	116
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	122	105	106	111	101
Toluene-D8	2037-26-5	0.1	%	104	104	104	113	101
4-Bromofluorobenzene	460-00-4	0.1	%	108	93.0	101	104	102





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXB0T02_11/1/13	EXB0T03_11/1/13	EX01_11/1/13_02	EX01_110113_07	EX01_110113_06
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-011	ES1300953-012	ES1300953-013	ES1300953-014	ES1300953-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.0	13.9	39.3	19.5	47.5
<b>EG005T: Total Metals by ICP-AES</b>								
Barium	7440-39-3	10	mg/kg	60	110	10	70	300
Beryllium	7440-41-7	1	mg/kg	<1	<1	1	<1	<1
Cobalt	7440-48-4	2	mg/kg	4	3	14	4	7
Manganese	7439-96-5	5	mg/kg	131	100	118	153	195
Vanadium	7440-62-2	5	mg/kg	61	50	71	62	42
Arsenic	7440-38-2	5	mg/kg	6	5	21	6	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	38	25	50	38	18
Copper	7440-50-8	5	mg/kg	32	40	10	37	134
Lead	7439-92-1	5	mg/kg	50	48	16	34	92
Nickel	7440-02-0	2	mg/kg	9	7	17	13	10
Zinc	7440-66-6	5	mg/kg	55	116	30	102	164
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	1.2	<0.1	<0.1	1.0	<0.1
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXB0T02_11/1/13	EXB0T03_11/1/13	EX01_11/1/13_02	EX01_110113_07	EX01_110113_06
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-011	ES1300953-012	ES1300953-013	ES1300953-014	ES1300953-015
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXB0T02_11/1/13	EXB0T03_11/1/13	EX01_11/1/13_02	EX01_110113_07	EX01_110113_06
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-011	ES1300953-012	ES1300953-013	ES1300953-014	ES1300953-015
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	11	52
C10 - C14 Fraction	----	50	mg/kg	310	<50	<50	490	80
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	310	<50	<50	490	80
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	10	mg/kg	10	<10	<10	45	97
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg	10	<10	<10	45	79
>C10 - C16 Fraction	----	50	mg/kg	330	<50	<50	530	100
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	330	<50	<50	530	100
<b>EP080: BTEX</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.0
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	2.7
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	13.6
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.9
<b>EP080: BTEXN</b>								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	14.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	18.2
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	107	95.7	103	122	88.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EXB0T02_11/1/13	EXB0T03_11/1/13	EX01_11/1/13_02	EX01_110113_07	EX01_110113_06
				11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00	11-JAN-2013 15:00
Compound	CAS Number	LOR	Unit	ES1300953-011	ES1300953-012	ES1300953-013	ES1300953-014	ES1300953-015
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	104	130	109	105	113
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	104	102	119	110	110
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	97.7	91.5	86.0	82.8	112
2-Chlorophenol-D4	93951-73-6	0.1	%	97.8	91.8	79.9	79.2	115
2,4,6-Tribromophenol	118-79-6	0.1	%	112	107	103	92.2	131
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	103	100	87.7	93.8	117
Anthracene-d10	1719-06-8	0.1	%	102	86.3	80.2	78.7	122
4-Terphenyl-d14	1718-51-0	0.1	%	110	126	124	104	132
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.0	111	104	102	102
Toluene-D8	2037-26-5	0.1	%	97.9	105	107	105	99.5
4-Bromofluorobenzene	460-00-4	0.1	%	103	96.6	107	105	90.4



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	29.4	145
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	49	145
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	32	142
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	127
2-Chlorophenol-D4	93951-73-6	64	126
2,4,6-Tribromophenol	118-79-6	36	136
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	64	130
Anthracene-d10	1719-06-8	69	135
4-Terphenyl-d14	1718-51-0	64	136
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## Environmental Division

# QUALITY CONTROL REPORT

Work Order	: <b>ES1300953</b>	Page	: 1 of 13
Client	: <b>URS AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: MR TIM SMITH	Contact	: Client Services
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: tim.smith@urs.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61-2-8784 8555
Facsimile	: +61 89413920	Facsimile	: +61-2-8784 8500
Project	: WATERFRONT 42213719 70061	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 22-JAN-2013
C-O-C number	: ----	Issue Date	: 29-JAN-2013
Sampler	: BA	No. of samples received	: 15
Order number	: ----	No. of samples analysed	: 15
Quote number	: EN/001/12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Nanthini Coilparampil	Laboratory Manager - Inorganics	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
		Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



## 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 (%)
EA055: Moisture Content (QC Lot: 2697046)									
ES1300953-003	EXE003_11/1/13	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.7	20.3	3.3	0% - 20%
ES1300953-014	EX01_110113_07	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.5	20.7	5.9	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 2697918)									
EB1301006-031	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	1	2	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	220	200	9.8	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	42	40	3.6	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	30	27	10.6	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	43	42	3.4	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	33	31	6.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	13	12	0.0	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	789	714	10.0	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	72	69	4.7	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	108	101	6.4	0% - 20%
ES1300953-007	EXE007_11/1/13	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	30	30	0.0	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	17	15	14.4	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	<2	0.0	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	16	8.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	20	18.8	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	211	201	5.0	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	16	14	14.0	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	22	20	9.6	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2697919)									
EB1301006-031	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1300953-007	EXE007_11/1/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2699016)									
EB1301006-031	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1300953-004	EXE004_11/1/13	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2699017)									
ES1300953-015	EX01_110113_06	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	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 (%)
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2699017) - continued</b>									
ES1301362-013	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2697054)</b>									
ES1300953-001	EXE001_11/1/13	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	1.2	0.8	36.2	0% - 50%
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 2697053)</b>									
ES1300953-001	EXE001_11/1/13	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	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 (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2697053) - continued									
ES1300953-011	EXB0T02_11/1/13	EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 2697068)									
ES1300953-001	EXE001_11/1/13	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2697068)									
ES1300953-001	EXE001_11/1/13	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	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 (%)		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2697068) - continued											
ES1300953-001	EXE001_11/1/13	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene TEQ (WHO)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1300953-011	EXB0T02_11/1/13	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene TEQ (WHO)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2697040)									
		ES1300953-001	EXE001_11/1/13	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2697067)											
ES1300953-001	EXE001_11/1/13	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit		
ES1300953-011	EXB0T02_11/1/13	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit		

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 Work Order : ES1300953  
 Client : URS AUSTRALIA PTY LTD  
 Project : WATERFRONT 42213719 70061



Sub-Matrix: <b>SOIL</b>				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: 2697067) - continued									
ES1300953-011	EXB0T02_11/1/13	EP071: C10 - C14 Fraction	----	50	mg/kg	310	280	9.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2697040)									
ES1300953-001	EXE001_11/1/13	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP080: C6 - C10 Fraction	----	10	mg/kg	10	13	23.9	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2697067)									
ES1300953-001	EXE001_11/1/13	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	330	310	6.1	No Limit
EP080: BTEXN (QC Lot: 2697040)									
ES1300953-001	EXE001_11/1/13	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1300953-011	EXB0T02_11/1/13	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	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 Sample (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**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2697918)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	110	84	128
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	109	83	125
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	89.0	88	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	97.9	79	119
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	104	70	130
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16.0 mg/kg	113	83	127
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	100	83	127
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	97.5	81	117
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	103	83	121
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	114	79	127
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	111	89	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	109	78	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2697919)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.9	72	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2699016)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	88.5	71	123
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2699017)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	85.2	71	123
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2697054)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	98.0	57.4	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 2697053)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.5	60.8	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	59.4	115
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	81.0	59.8	117
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	59.8	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.3	65.8	114
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	65.6	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.9	67	113
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	65.6	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	60.7	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	65.8	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	57.3	120
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	67.4	116
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	67.5	114

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 2697053) - continued								
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.2	63	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	66.1	117
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	65.3	116
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	63.6	119
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	88.3	58.4	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	63.6	117
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	96.6	50.4	132
EP075(SIM)A: Phenolic Compounds (QCLot: 2697068)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	107	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	81.2	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	85.7	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	76.4	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	74.5	60.3	117
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	89.7	74.5	119
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	80.1	71.6	113
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	90.2	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	79.6	76.4	114
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	70.7	62.2	115
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	74.2	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	20.0	1.23	91.6
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2697068)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	82.4	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	83.9	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	89.8	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	87.6	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	83.2	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	84.5	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	83.7	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	85.0	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	79.9	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	84.4	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	79.2	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	88.7	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	87.8	76.4	113
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	76.1	71	113
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	80.2	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	85.2	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697040)								



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697040) - continued</b>								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	122	68.4	128
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697067)</b>								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	85.0	59	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	82.7	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	86.0	63	131
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2697040)</b>								
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	31 mg/kg	118	68.4	128
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2697067)</b>								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	86.4	59	131
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	82.3	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	89.3	63	131
<b>EP080: BTEXN (QCLot: 2697040)</b>								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.4	62	120
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	90.6	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	83.4	58	118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	81.4	60	120
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	86.5	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.0	62	138

## 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: <b>SOIL</b>				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: 2697918)							
EB1301006-031	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.8	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.0	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.5	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	102	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	101	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	95.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2697919)							
EB1301006-031	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	70	130





Sub-Matrix: <b>SOIL</b>				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2699016)							
EB1301006-031	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# Not Determined	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2699017)							
ES1300953-015	EX01_110113_06	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# 57.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2697054)							
ES1300953-001	EXE001_11/1/13	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	89.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2697053)							
ES1300953-001	EXE001_11/1/13	EP068: gamma-BHC	58-89-9	0.5 mg/kg	113	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	81.1	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	86.9	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	83.3	70	130
		EP068: Endrin	72-20-8	2 mg/kg	93.0	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	92.8	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 2697068)							
ES1300953-001	EXE001_11/1/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	89.3	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	88.6	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	73.8	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	79.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	39.7	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2697068)							
ES1300953-001	EXE001_11/1/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697040)							
ES1300953-001	EXE001_11/1/13	EP080: C6 - C9 Fraction	----	32.5 mg/kg	113	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697067)							
ES1300953-001	EXE001_11/1/13	EP071: C10 - C14 Fraction	----	640 mg/kg	87.8	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	98.7	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	78.7	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2697040)							
ES1300953-001	EXE001_11/1/13	EP080: C6 - C10 Fraction	----	37.5 mg/kg	110	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2697067)							
ES1300953-001	EXE001_11/1/13	EP071: >C10 - C16 Fraction	----	850 mg/kg	104	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	92.1	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	54.8	52	132
EP080: BTEXN (QCLot: 2697040)							
ES1300953-001	EXE001_11/1/13	EP080: Benzene	71-43-2	2.5 mg/kg	75.3	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 2697040) - continued							
ES1300953-001	EXE001_11/1/13	EP080: Toluene	108-88-3	2.5 mg/kg	81.7	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	79.1	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	79.0	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.0	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	76.1	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697040)										
ES1300953-001	EXE001_11/1/13	EP080: C6 - C9 Fraction	----	32.5 mg/kg	113	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2697040)										
ES1300953-001	EXE001_11/1/13	EP080: C6 - C10 Fraction	----	37.5 mg/kg	110	----	70	130	----	----
EP080: BTEXN (QCLot: 2697040)										
ES1300953-001	EXE001_11/1/13	EP080: Benzene	71-43-2	2.5 mg/kg	75.3	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	81.7	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	79.1	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	79.0	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.0	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	76.1	----	70	130	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 2697053)										
ES1300953-001	EXE001_11/1/13	EP068: gamma-BHC	58-89-9	0.5 mg/kg	113	----	70	130	----	----
		EP068: Heptachlor	76-44-8	0.5 mg/kg	81.1	----	70	130	----	----
		EP068: Aldrin	309-00-2	0.5 mg/kg	86.9	----	70	130	----	----
		EP068: Dieldrin	60-57-1	0.5 mg/kg	83.3	----	70	130	----	----
		EP068: Endrin	72-20-8	2 mg/kg	93.0	----	70	130	----	----
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	92.8	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2697054)										
ES1300953-001	EXE001_11/1/13	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	89.0	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697067)										
ES1300953-001	EXE001_11/1/13	EP071: C10 - C14 Fraction	----	640 mg/kg	87.8	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	98.7	----	53	131	----	----



Page : 13 of 13  
 Work Order : ES1300953  
 Client : URS AUSTRALIA PTY LTD  
 Project : WATERFRONT 42213719 70061



Sub-Matrix: <b>SOIL</b>				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2697067) - continued										
ES1300953-001	EXE001_11/1/13	EP071: C29 - C36 Fraction	----	2860 mg/kg	78.7	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2697067)										
ES1300953-001	EXE001_11/1/13	EP071: >C10 - C16 Fraction	----	850 mg/kg	104	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	92.1	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	54.8	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 2697068)										
ES1300953-001	EXE001_11/1/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	89.3	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	88.6	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	73.8	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	79.2	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	39.7	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2697068)										
ES1300953-001	EXE001_11/1/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.6	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.0	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 2697918)										
EB1301006-031	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.8	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.0	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	97.5	----	70	130	----	----
		EG005T: Copper	7440-50-8	250 mg/kg	102	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	101	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	103	----	70	130	----	----
		EG005T: Zinc	7440-66-6	250 mg/kg	95.1	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2697919)										
EB1301006-031	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	----	70	130	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2699016)										
EB1301006-031	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# Not Determined	----	70	130	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2699017)										
ES1300953-015	EX01_110113_06	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# 57.5	----	70	130	----	----

**URS**

ADDRESS: URS Australia

Level 3, 93 Mitchell Street  
GPO Box 2005  
Darwin, Northern Territory 0800

PHONE NO: 08 8980 2900  
FAX NO: 08 8941 3920

LABORATORY: ALS

277-289 Woodpark Road  
Smithfield NSW 2164

PHONE NO: 02 8784 8555  
FAX NO: 02 8784 8500

CHAIN OF CUSTODY - DARWIN WATERFRONT PROJECT

All results to be provided in MRED format

email address: tim.smith@urs.com; darwin@urs.com;  
philippa.scott@urs.com  
andrew.piggin@urs.com

TURNAROUND DETAILS

Std 5 Day TAT\*\*

COC SEQUENCE NUMBER

2 3 4

please circle

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA

Free ice / frozen icebricks

present upon receipt? Y N

Random Sample Temperature on Receipt oC

Environmental Division  
Brisbane

Work Order

**EB1313591**

Telephone : +61-7-3243 7222

URS PROJECT NO: 42213719 Contract No. 0413599470

URS PM: Andrew Piggin URS CONTACT: Philippa Scott

URS SAMPLERS: Philippa Scott

RELINQUISHED BY: P-Scott

DATE: 4/6/13 TIME: 13:00

RECEIVED BY: J. Benger

DATE: 4/6/13 TIME: 13:00

COMMENTS: Please contact Philippa for any queries 0413 599 470

Rec: OHO of 05/06/13 09:45

SAMPLE DETAILS					CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED										HOLD			
Batch No	SAMPLE Location	SAMPLE ID	DATE	MATRIX (Solid / Liquid)	Liquid										Total Containers	S-26	P-13/1	TPH C6-C9, BTEXN	Metals									
1		SP06-01-040613	4/6/13	S												2	X	X										
2		SP06-02-040613	4/6/13	S												2												X
3		SP06-03-040613	4/6/13	S												2												X
4		SP06-04-040613	4/6/13	S												2												X
5		SP06-05-040613	4/6/13	S												2												X
6		SP06-06-040613	4/6/13	S												2												X
7		SP06-07-040613	4/6/13	S												2												X
8		SP06-08-040613	4/6/13	S												2												X
9		SP06-09-040613	4/6/13	S												2	X	X										X
10		SP06-10-040613	4/6/13	S												2												X
11		DP01-040613	4/6/13	S												2	X	X										X
TOTALS																21	4	4										7

## CHAIN OF CUSTODY - DARWIN WATERFRONT PROJECT

ADDRESS: URS Australia  Level 3, 93 Mitchell Street GPO Box 2005 Darwin, Northern Territory 0800		LABORATORY: ALS  277-289 Woodpark Road Smithfield NSW 2164		All results to be provided in MRED format  tim.smith@urs.com; darwin@urs.com; phillipa.scott@urs.com andrew.piggin@urs.com  email address:  TURNAROUND DETAILS  COC SEQUENCE NUMBER 1 2 3 4 please circle		Custody Seal ? Y N NA  Free ice / frozen icebricks  present upon receipt? Y N Random Sample Temperature on Receipt oC	
PHONE NO: 08 8980 2900 FAX NO: 08 8941 3920		PHONE NO: 02 8784 8555 FAX NO: 02 8784 8500		Std 5 Day TAT**		RECEIVED BY: J. Bengel DATE: 4/6/13 TIME: 13:00	
URS PROJECT NO: 42213719 URS PM: Andrew Piggin		Contract No. URS CONTACT: Philippa Scott		RELINQUISHED BY: P. Scott DATE: 4/6/13 TIME: 13:00		RELINQUISHED BY:  TIME:	
URS SAMPLERS : Philippa Scott							
COMMENTS: Please contact Philippa for any queries 0413 599 470						REC: AP	
SAMPLE DETAILS		CONTAINER TYPE & PRESERVATIVE		ANALYSIS REQUIRED			
Batch No	SAMPLE Location	SAMPLE ID	DATE	MATRIX (Solid / Liquid)	Liquid	Total Containers	
12		GC101-040613	04/6/13	S		2	
13		GC101-040613	04/6/13	S		1	
14		GC101-040613	04/6/13	S		1	
TOTALS						4	

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **EB1313591**

Client : **URS AUSTRALIA PTY LTD**  
 Contact : **MR ANDREW PIGGIN**  
 Address : **G P O BOX 2005**  
**DARWIN NT, AUSTRALIA 0801**

Laboratory : **Environmental Division Brisbane**  
 Contact : **Loren Schiavon**  
 Address : **2 Byth Street Stafford QLD Australia**  
**4053**

E-mail : **andrew.piggin@urs.com**  
 Telephone : **+61 89802900**  
 Facsimile : **+61 08 89413920**

E-mail : **loren.schiavon@alsglobal.com**  
 Telephone : **+61 2 8784 8503**  
 Facsimile : **+61 2 8784 8500**

Project : **42213719**  
 Order number : **----**  
 C-O-C number : **----**  
 Site : **----**  
 Sampler : **Philippa Scott**

Page : **1 of 3**  
 Quote number : **ES2012URSNT0270 (EN/001/12)**  
 QC Level : **NEPM 1999 Schedule B(3) and ALS**  
**QCS3 requirement**

### Dates

Date Samples Received : **05-JUN-2013**  
 Client Requested Due Date : **14-JUN-2013**

Issue Date : **07-JUN-2013 12:35**  
 Scheduled Reporting Date : **14-JUN-2013**

### Delivery Details

Mode of Delivery : **Carrier**  
 No. of coolers/boxes : **1 MEDIUM**  
 Security Seal : **Intact.**

Temperature : **1.1°C - Ice present**  
 No. of samples received : **14**  
 No. of samples analysed : **7**

### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Please be advised that samples that requires P-13/1 were not logged for S-26 as all the analysis from this suite were all included in P-13/1.**
- **Please be advised that sample DUP\_02\_040613 was forwarded to Envirolab as requested.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Matt Goodwin.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exist.

## 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - P-13/1 (ES) NEPM Table 5A (Sydney Lab)
EB1313591-001	04-JUN-2013 15:00	SP06_01_040613		✓
EB1313591-002	04-JUN-2013 15:00	SP06_02_040613	✓	
EB1313591-003	04-JUN-2013 15:00	SP06_03_040613	✓	
EB1313591-004	04-JUN-2013 15:00	SP06_04_040613		✓
EB1313591-005	04-JUN-2013 15:00	SP06_05_040613	✓	
EB1313591-006	04-JUN-2013 15:00	SP06_06_040613	✓	
EB1313591-007	04-JUN-2013 15:00	SP06_07_040613	✓	
EB1313591-008	04-JUN-2013 15:00	SP06_08_040613	✓	
EB1313591-009	04-JUN-2013 15:00	SP06_09_040613		✓
EB1313591-010	04-JUN-2013 15:00	SP06_10_040613	✓	
EB1313591-011	04-JUN-2013 15:00	DUP_01_040613		✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-02T 8 metals (Total)	WATER - W-18 TPH(C6 - C9)/BTEX
EB1313591-012	04-JUN-2013 15:00	QCA01_040613		✓
EB1313591-013	04-JUN-2013 15:00	QCB01_040613	✓	
EB1313591-014	04-JUN-2013 15:00	QCC01_040613	✓	

## Proactive Holding Time Report

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

[illegible]

## Environmental Division

# INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1300953	Page	: 1 of 9
Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR TIM SMITH	Contact	: Client Services
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: tim.smith@urs.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61-2-8784 8555
Facsimile	: +61 89413920	Facsimile	: +61-2-8784 8500
Project	: WATERFRONT 42213719 70061	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 22-JAN-2013
C-O-C number	: ----	Issue Date	: 29-JAN-2013
Sampler	: BA	No. of samples received	: 15
Order number	: ----	No. of samples analysed	: 15
Quote number	: EN/001/12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)	11-JAN-2013	----	----	----	23-JAN-2013	25-JAN-2013	✓	
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)	11-JAN-2013	23-JAN-2013	10-JUL-2013	✓	25-JAN-2013	10-JUL-2013	✓	
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)	11-JAN-2013	23-JAN-2013	08-FEB-2013	✓	24-JAN-2013	08-FEB-2013	✓	
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							





Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		11-JAN-2013	24-JAN-2013	08-FEB-2013	✓	24-JAN-2013	31-JAN-2013	✓
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	25-JAN-2013	04-MAR-2013	✓
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	25-JAN-2013	04-MAR-2013	✓
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	24-JAN-2013	04-MAR-2013	✓
EXE001_11/1/13, EXE003_11/1/13, EXE005_11/1/13, EXE007_11/1/13, QC01, EXB0T02_11/1/13, EX01_11/1/13_02, EX01_110113_06	EXE002_11/1/13, EXE004_11/1/13, EXE006_11/1/13, EXE008_11/1/13, EXB0T01_11/1/13, EXB0T03_11/1/13, EX01_110113_07,							



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM))		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	24-JAN-2013	04-MAR-2013	✓
EXE001_11/1/13,	EXE002_11/1/13,							
EXE003_11/1/13,	EXE004_11/1/13,							
EXE005_11/1/13,	EXE006_11/1/13,							
EXE007_11/1/13,	EXE008_11/1/13,							
QC01,	EXB0T01_11/1/13,							
EXB0T02_11/1/13,	EXB0T03_11/1/13,							
EX01_11/1/13_02,	EX01_110113_07,							
EX01_110113_06								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	24-JAN-2013	04-MAR-2013	✓
EXE001_11/1/13,	EXE002_11/1/13,							
EXE003_11/1/13,	EXE004_11/1/13,							
EXE005_11/1/13,	EXE006_11/1/13,							
EXE007_11/1/13,	EXE008_11/1/13,							
QC01,	EXB0T01_11/1/13,							
EXB0T02_11/1/13,	EXB0T03_11/1/13,							
EX01_11/1/13_02,	EX01_110113_07,							
EX01_110113_06								
EP080: BTEX								
Soil Glass Jar - Unpreserved (EP080)		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	24-JAN-2013	25-JAN-2013	✓
EXE001_11/1/13,	EXE002_11/1/13,							
EXE003_11/1/13,	EXE004_11/1/13,							
EXE005_11/1/13,	EXE006_11/1/13,							
EXE007_11/1/13,	EXE008_11/1/13,							
QC01,	EXB0T01_11/1/13,							
EXB0T02_11/1/13,	EXB0T03_11/1/13,							
EX01_11/1/13_02,	EX01_110113_07,							
EX01_110113_06								
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	24-JAN-2013	25-JAN-2013	✓
EXE001_11/1/13,	EXE002_11/1/13,							
EXE003_11/1/13,	EXE004_11/1/13,							
EXE005_11/1/13,	EXE006_11/1/13,							
EXE007_11/1/13,	EXE008_11/1/13,							
QC01,	EXB0T01_11/1/13,							
EXB0T02_11/1/13,	EXB0T03_11/1/13,							
EX01_11/1/13_02,	EX01_110113_07,							
EX01_110113_06								

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)		11-JAN-2013	23-JAN-2013	25-JAN-2013	✓	24-JAN-2013	25-JAN-2013	✓
EXE001_11/1/13,	EXE002_11/1/13,							
EXE003_11/1/13,	EXE004_11/1/13,							
EXE005_11/1/13,	EXE006_11/1/13,							
EXE007_11/1/13,	EXE008_11/1/13,							
QC01,	EXB0T01_11/1/13,							
EXB0T02_11/1/13,	EXB0T03_11/1/13,							
EX01_11/1/13_02,	EX01_110113_07,							
EX01_110113_06								



## 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(where) 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	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.8	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.0	5.0	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.9	5.0	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	5.3	5.0	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement



## 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
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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 (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	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 dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(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 (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.





## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### 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
<b>Matrix Spike (MS) Recoveries</b>							
EG048: Hexavalent Chromium (Alkaline Digest)	EB1301006-031	Anonymous	Hexavalent Chromium	18540-29-9	Not Determined	----	Matrix spike recovery not determined due to sample matrix interference.
EG048: Hexavalent Chromium (Alkaline Digest)	ES1300953-015	EX01_110113_06	Hexavalent Chromium	18540-29-9	57.5 %	70-130%	Recovery less than lower data quality objective

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## Environmental Division

# CERTIFICATE OF ANALYSIS

Work Order	: <b>EB1313591</b>	Page	: 1 of 8
Client	: <b>URS AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Brisbane
Contact	: MR ANDREW PIGGIN	Contact	: Loren Schiavon
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: andrew.piggin@urs.com	E-mail	: loren.schiavon@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61 2 8784 8503
Facsimile	: +61 08 89413920	Facsimile	: +61 2 8784 8500
Project	: 42213719	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 05-JUN-2013
Sampler	: Philippa Scott	Issue Date	: 14-JUN-2013
Site	: ----		
Quote number	: EN/001/12	No. of samples received	: 14
		No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits





## 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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

- **ED093T(Major Cations by ICPAES-Total)/EG005T(Total Metals by ICPAES):Samples EB1313591 - 001 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection**
- **PAH/Phenols: High failing LCS deemed acceptable as all associated analyte results are less than LOR.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Matt Frost	Senior Organic Chemist	Brisbane Inorganics
		Brisbane Organics
		Brisbane Organics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics
		Brisbane Inorganics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				SP06_01_040613	SP06_04_040613	SP06_09_040613	DUP_01_040613	----
Client sampling date / time				04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	----
Compound	CAS Number	LOR	Unit	EB1313591-001	EB1313591-004	EB1313591-009	EB1313591-011	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	15.6	23.3	12.8	14.1	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	5	<5	5	----
Barium	7440-39-3	10	mg/kg	90	80	100	90	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	40	32	30	30	----
Cobalt	7440-48-4	2	mg/kg	2	3	5	2	----
Copper	7440-50-8	5	mg/kg	33	89	30	34	----
Lead	7439-92-1	5	mg/kg	62	63	38	73	----
Manganese	7439-96-5	5	mg/kg	124	121	277	94	----
Nickel	7440-02-0	2	mg/kg	5	6	5	5	----
Vanadium	7440-62-2	5	mg/kg	60	54	43	63	----
Zinc	7440-66-6	5	mg/kg	120	129	86	131	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	----
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				SP06_01_040613	SP06_04_040613	SP06_09_040613	DUP_01_040613	----
				04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	----
Compound	CAS Number	LOR	Unit	EB1313591-001	EB1313591-004	EB1313591-009	EB1313591-011	----
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	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	----
Acenaphthene	83-32-9	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	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<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)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				SP06_01_040613	SP06_04_040613	SP06_09_040613	DUP_01_040613	----
				04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	----
Compound	CAS Number	LOR	Unit	EB1313591-001	EB1313591-004	EB1313591-009	EB1313591-011	----
<b>EP068S: Organochlorine Pesticide Surrogate - Continued</b>								
Dibromo-DDE	21655-73-2	0.1	%	94.8	89.0	76.9	85.7	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	116	113	104	106	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	95.7	130	137	127	----
2-Chlorophenol-D4	93951-73-6	0.1	%	94.7	127	139	128	----
2,4,6-Tribromophenol	118-79-6	0.1	%	83.3	107	116	94.8	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	103	155	146	149	----
Anthracene-d10	1719-06-8	0.1	%	75.7	121	133	139	----
4-Terphenyl-d14	1718-51-0	0.1	%	80.3	126	140	130	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	90.9	92.6	88.0	89.2	----
Toluene-D8	2037-26-5	0.1	%	90.7	94.0	92.0	90.3	----
4-Bromofluorobenzene	460-00-4	0.1	%	89.2	90.0	88.4	86.1	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QCA01_040613	QCB01_040613	QCC01_040613	----	----
				04-JUN-2013 15:00	04-JUN-2013 15:00	04-JUN-2013 15:00	----	----
Compound	CAS Number	LOR	Unit	EB1313591-012	EB1313591-013	EB1313591-014	----	----
<b>EG020T: Total Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	----	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft</b>								
C6 - C10 Fraction	----	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	----	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	97.7	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	100	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	97.3	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	16.2	133.7
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	10	138
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	22.8	134.5
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	34.8	154.5
2-Chlorophenol-D4	93951-73-6	41.9	152.8
2,4,6-Tribromophenol	118-79-6	26.0	156.8
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	33.8	156.5
Anthracene-d10	1719-06-8	36.9	153.1
4-Terphenyl-d14	1718-51-0	41.8	172.2
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	52.7	133.7
Toluene-D8	2037-26-5	60.3	131.1
4-Bromofluorobenzene	460-00-4	59.2	126.6

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	66.1	137.9
Toluene-D8	2037-26-5	79.2	119.6
4-Bromofluorobenzene	460-00-4	74.2	118.0

## Environmental Division

# QUALITY CONTROL REPORT

Work Order	: <b>EB1313591</b>	Page	: 1 of 15
Client	: <b>URS AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Brisbane
Contact	: MR ANDREW PIGGIN	Contact	: Loren Schiavon
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: andrew.piggin@urs.com	E-mail	: loren.schiavon@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61 2 8784 8503
Facsimile	: +61 08 89413920	Facsimile	: +61 2 8784 8500
Project	: 42213719	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 05-JUN-2013
Sampler	: Philippa Scott	Issue Date	: 14-JUN-2013
Order number	: ----		
Quote number	: EN/001/12	No. of samples received	: 14
		No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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





## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Matt Frost	Senior Organic Chemist	Brisbane Inorganics
		Brisbane Organics
		Brisbane Organics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics
		Brisbane Inorganics



## 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 (%)
EA055: Moisture Content (QC Lot: 2907839)									
EB1313591-011	DUP_01_040613	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.1	13.6	3.2	0% - 50%
EB1313594-013	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.2	23.7	2.1	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 2907867)									
EB1313591-001	SP06_01_040613	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	90	80	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	40	46	14.9	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	33	36	6.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	62	140	# 76.2	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	124	93	# 28.8	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	60	59	0.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	120	114	5.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2907868)									
EB1313591-001	SP06_01_040613	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2907789)									
EB1313591-001	SP06_01_040613	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2912401)									
EB1313591-001	SP06_01_040613	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2912400)									
EB1313591-001	SP06_01_040613	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2912400) - continued											
EB1313591-001	SP06_01_040613	EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
EB1313983-002	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
		EP075(SIM)A: Phenolic Compounds (QC Lot: 2907913)									
		EB1313591-001	SP06_01_040613	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4-Dimethylphenol	105-67-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4-Dichlorophenol	120-83-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,6-Dichlorophenol	87-65-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			0.5	mg/kg	<0.5	<0.5	0.0	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 (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 2907913) - continued									
EB1313591-001	SP06_01_040613	EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2907913)									
EB1313591-001	SP06_01_040613	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (WHO)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2907902)									
EB1313591-001	SP06_01_040613	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EB1313682-007	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2907911)									
EB1313591-001	SP06_01_040613	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EB1313682-007	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2907902)									
EB1313591-001	SP06_01_040613	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EB1313682-007	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2907911)									
EB1313591-001	SP06_01_040613	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EB1313682-007	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

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 Project : 42213719



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 2010 Draft (QC Lot: 2907911) - continued									
EB1313682-007	Anonymous	EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 2907902)									
EB1313591-001	SP06_01_040613	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB1313682-007	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 2908361)									
EB1313591-013	QCB01_040613	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB1313651-007	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2910100)									
EB1313577-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EB1313623-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2907320)									
EB1313591-012	QCA01_040613	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EB1313781-010	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit

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 Project : 42213719



Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2907320)</b>									
EB1313591-012	QCA01_040613	EP080: C6 - C10 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EB1313781-010	Anonymous	EP080: C6 - C10 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 2907320)</b>									
EB1313591-012	QCA01_040613	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
EB1313781-010	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	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 Sample (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**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 2907867)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	107	84	124
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	115	89	130
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	120	94	128
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	109	88	118
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	93.3	73	127
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16.0 mg/kg	109	89	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	108	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	104	84	121
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	97.8	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	104	89	126
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	115	91	127
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	108	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2907868)								
EG035T: Mercury	7439-97-6	0.10	mg/kg	<0.1	2.57 mg/kg	102	78	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2907789)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	81.3	80	116
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2912401)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	104	61	118
EP068A: Organochlorine Pesticides (OC) (QCLot: 2912400)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.9	58	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	111	57	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	101	54	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	60	136
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	66	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	124	70	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	100	75	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	109	59	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	105	61	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	114	54	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	61	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	102	72	136
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	67	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	116	65	150
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	61	122



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 2912400) - continued								
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	106	38	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	52	125
EP068: 4,4'-DDT	50-29-3	0.05	mg/kg	----	0.5 mg/kg	123	80	155
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	115	55	129
EP068: Methoxychlor	72-43-5	0.05	mg/kg	----	0.5 mg/kg	122	47	136
		0.2	mg/kg	<0.2	----	----	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 2907913)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	5.0 mg/kg	121	85	129
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	5.0 mg/kg	121	85	127
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	5.0 mg/kg	# 125	67	124
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	10 mg/kg	114	62	125
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	5.0 mg/kg	94.6	44	130
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	5.0 mg/kg	110	63	121
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	5.0 mg/kg	101	54	121
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	5.0 mg/kg	# 131	63	124
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	5.0 mg/kg	120	60	126
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	5.0 mg/kg	119	50	121
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	5.0 mg/kg	119	49	121
EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2	10 mg/kg	57.7	20	100
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2907913)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	111	71	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 138	67	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	# 127	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	# 118	76	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	106	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	# 143	70	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	# 128	69	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	126	69	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	# 145	61	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	# 125	62	119
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	# 152	49	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	116	64	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	106	65	121
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	124	51	135
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	122	45	134
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	122	53	133
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907902)								





Sub-Matrix: <b>SOIL</b>				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907902) - continued								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	87.4	66	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907911)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	312 mg/kg	90.4	84	117
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	500 mg/kg	93.2	80	118
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907902)								
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	18.5 mg/kg	90.8	66	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907911)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	413 mg/kg	94.3	86	117
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	360 mg/kg	94.8	72	113
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEXN (QCLot: 2907902)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.3	73	108
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	87.1	73	111
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	80.7	67	110
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	82.5	66	112
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	82.7	68	110
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	80.8	72	115
Sub-Matrix: <b>WATER</b>				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2908361)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	100	80	113
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	99.8	84	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	109	87	118
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	105	85	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	103	89	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	106	86	119
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	96.1	77	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2910100)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	97.8	83	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907320)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	102	73	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907320)								
EP080: C6 - C10 Fraction	----	20	µg/L	<20	185 µg/L	100	70	130
EP080: C6 - C10 Fraction minus BTEX (F1)	----	20	µg/L	<20	----	----	----	----



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 2907320)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	105	78	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	76	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	96.4	78	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	20 µg/L	97.9	78	124
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	99.0	77	123
EP080: Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	86.5	75	124

## 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**

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: 2907867)							
EB1313591-004	SP06_04_040613	EG005T: Arsenic	7440-38-2	50 mg/kg	87.8	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	88.5	70	130
		EG005T: Beryllium	7440-41-7	5 mg/kg	120	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	112	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	111	70	130
		EG005T: Cobalt	7440-48-4	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	94.0	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	93.2	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	86.0	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	108	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	89.8	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	91.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2907868)							
EB1313591-004	SP06_04_040613	EG035T: Mercury	7439-97-6	5.0 mg/kg	108	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2907789)							
EB1313591-004	SP06_04_040613	EG048G: Hexavalent Chromium	18540-29-9	8 mg/kg	112	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2912401)							
EB1313591-004	SP06_04_040613	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	108	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2912400)							
EB1313591-004	SP06_04_040613	EP068: gamma-BHC	58-89-9	0.5 mg/kg	105	70	130



Sub-Matrix: <b>SOIL</b>				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 2912400) - continued							
EB1313591-004	SP06_04_040613	EP068: Heptachlor	76-44-8	0.5 mg/kg	114	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	105	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	109	70	130
		EP068: Endrin	72-20-8	2 mg/kg	104	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	84.8	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 2907913)							
EB1313591-004	SP06_04_040613	EP075(SIM): Phenol	108-95-2	2.5 mg/kg	122	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	2.5 mg/kg	126	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	2.5 mg/kg	117	70	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	2.5 mg/kg	105	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	2.5 mg/kg	104	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2907913)							
EB1313591-004	SP06_04_040613	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	127	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	128	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907902)							
EB1313591-004	SP06_04_040613	EP080: C6 - C9 Fraction	----	8 mg/kg	74.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907911)							
EB1313591-004	SP06_04_040613	EP071: C10 - C14 Fraction	----	312 mg/kg	84.4	70	130
		EP071: C15 - C28 Fraction	----	500 mg/kg	85.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907902)							
EB1313591-004	SP06_04_040613	EP080: C6 - C10 Fraction	----	8 mg/kg	77.3	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907911)							
EB1313591-004	SP06_04_040613	EP071: >C10 - C16 Fraction	----	413 mg/kg	87.4	70	130
		EP071: >C16 - C34 Fraction	----	360 mg/kg	86.7	70	130
EP080: BTEXN (QCLot: 2907902)							
EB1313591-004	SP06_04_040613	EP080: Benzene	71-43-2	2 mg/kg	78.2	70	130
		EP080: Toluene	108-88-3	2 mg/kg	79.4	70	130
Sub-Matrix: <b>WATER</b>				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2908361)							
EB1313591-014	QCC01_040613	EG020A-T: Arsenic	7440-38-2	1.000 mg/L	104	70	130
		EG020A-T: Cadmium	7440-43-9	0.500 mg/L	102	70	130
		EG020A-T: Chromium	7440-47-3	1.000 mg/L	107	70	130
		EG020A-T: Copper	7440-50-8	1.000 mg/L	103	70	130
		EG020A-T: Lead	7439-92-1	1.000 mg/L	105	70	130

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2908361) - continued							
EB1313591-014	QCC01_040613	EG020A-T: Nickel	7440-02-0	1.000 mg/L	101	70	130
		EG020A-T: Zinc	7440-66-6	1.000 mg/L	99.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2910100)							
EB1313590-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	107	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907320)							
EB1313631-001	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	94.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907320)							
EB1313631-001	Anonymous	EP080: C6 - C10 Fraction	----	40 µg/L	120	70	130
EP080: BTEXN (QCLot: 2907320)							
EB1313631-001	Anonymous	EP080: Benzene	71-43-2	10 µg/L	93.6	70	130
		EP080: Toluene	108-88-3	10 µg/L	93.7	70	130

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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: <b>SOIL</b>				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2907789)										
EB1313591-004	SP06_04_040613	EG048G: Hexavalent Chromium	18540-29-9	8 mg/kg	112	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 2907867)										
EB1313591-004	SP06_04_040613	EG005T: Arsenic	7440-38-2	50 mg/kg	87.8	----	70	130	----	----
		EG005T: Barium	7440-39-3	50 mg/kg	88.5	----	70	130	----	----
		EG005T: Beryllium	7440-41-7	5 mg/kg	120	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	25 mg/kg	112	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	111	----	70	130	----	----
		EG005T: Cobalt	7440-48-4	50 mg/kg	110	----	70	130	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	94.0	----	70	130	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	93.2	----	70	130	----	----
		EG005T: Manganese	7439-96-5	50 mg/kg	86.0	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	108	----	70	130	----	----
		EG005T: Vanadium	7440-62-2	50 mg/kg	89.8	----	70	130	----	----
EG005T: Zinc	7440-66-6	50 mg/kg	91.0	----	70	130	----	----		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2907868)										
EB1313591-004	SP06_04_040613	EG035T: Mercury	7439-97-6	5.0 mg/kg	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907902)										

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 Project : 42213719



Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907902) - continued										
EB1313591-004	SP06_04_040613	EP080: C6 - C9 Fraction	----	8 mg/kg	74.3	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907902)										
EB1313591-004	SP06_04_040613	EP080: C6 - C10 Fraction	----	8 mg/kg	77.3	----	70	130	----	----
EP080: BTEXN (QCLot: 2907902)										
EB1313591-004	SP06_04_040613	EP080: Benzene	71-43-2	2 mg/kg	78.2	----	70	130	----	----
		EP080: Toluene	108-88-3	2 mg/kg	79.4	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907911)										
EB1313591-004	SP06_04_040613	EP071: C10 - C14 Fraction	----	312 mg/kg	84.4	----	70	130	----	----
		EP071: C15 - C28 Fraction	----	500 mg/kg	85.6	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907911)										
EB1313591-004	SP06_04_040613	EP071: >C10 - C16 Fraction	----	413 mg/kg	87.4	----	70	130	----	----
		EP071: >C16 - C34 Fraction	----	360 mg/kg	86.7	----	70	130	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 2907913)										
EB1313591-004	SP06_04_040613	EP075(SIM): Phenol	108-95-2	2.5 mg/kg	122	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	2.5 mg/kg	126	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	2.5 mg/kg	117	----	70	130	----	----
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	2.5 mg/kg	105	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	2.5 mg/kg	104	----	70	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2907913)										
EB1313591-004	SP06_04_040613	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	127	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	128	----	70	130	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 2912400)										
EB1313591-004	SP06_04_040613	EP068: gamma-BHC	58-89-9	0.5 mg/kg	105	----	70	130	----	----
		EP068: Heptachlor	76-44-8	0.5 mg/kg	114	----	70	130	----	----
		EP068: Aldrin	309-00-2	0.5 mg/kg	105	----	70	130	----	----
		EP068: Dieldrin	60-57-1	0.5 mg/kg	109	----	70	130	----	----
		EP068: Endrin	72-20-8	2 mg/kg	104	----	70	130	----	----
		EP068: 4,4`-DDT	50-29-3	2 mg/kg	84.8	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2912401)										
EB1313591-004	SP06_04_040613	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	108	----	70	130	----	----

Sub-Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2907320)										
EB1313631-001	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	94.2	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2907320)										
EB1313631-001	Anonymous	EP080: C6 - C10 Fraction	----	40 µg/L	120	----	70	130	----	----





Sub-Matrix: WATER

Sub-Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080T: BTEXN (QCLot: 2907320)										
EB1313631-001	Anonymous	EP080: Benzene	71-43-2	10 µg/L	93.6	----	70	130	----	----
		EP080: Toluene	108-88-3	10 µg/L	93.7	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 2908361)										
EB1313591-014	QCC01_040613	EG020A-T: Arsenic	7440-38-2	1.000 mg/L	104	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.500 mg/L	102	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1.000 mg/L	107	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1.000 mg/L	103	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1.000 mg/L	105	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1.000 mg/L	101	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1.000 mg/L	99.8	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2910100)										
EB1313590-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	107	----	70	130	----	----

Environmental Division

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>EB1313591</b>	Page	: 1 of 9
Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR ANDREW PIGGIN	Contact	: Loren Schiavon
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: andrew.piggin@urs.com	E-mail	: loren.schiavon@alsglobal.com
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Facsimile	: +61 08 89413920	Facsimile	: +61 2 8784 8500
Project	: 42213719	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 05-JUN-2013
Sampler	: Philippa Scott	Issue Date	: 14-JUN-2013
Order number	: ----		
Quote number	: EN/001/12	No. of samples received	: 14
		No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	----	----	----	07-JUN-2013	18-JUN-2013	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	01-DEC-2013	✓	13-JUN-2013	01-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	02-JUL-2013	✓	13-JUN-2013	02-JUL-2013	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	02-JUL-2013	✓	13-JUN-2013	19-JUN-2013	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	18-JUN-2013	✓	12-JUN-2013	22-JUL-2013	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	18-JUN-2013	✓	12-JUN-2013	22-JUL-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
Soil Glass Jar - Unpreserved (EP071) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	18-JUN-2013	✓	12-JUN-2013	22-JUL-2013	✓





Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	18-JUN-2013	✓	12-JUN-2013	22-JUL-2013	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	12-JUN-2013	18-JUN-2013	✓	12-JUN-2013	22-JUL-2013	✓
EP080: BTEX								
Soil Glass Jar - Unpreserved (EP080) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	11-JUN-2013	18-JUN-2013	✓	12-JUN-2013	18-JUN-2013	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	11-JUN-2013	18-JUN-2013	✓	12-JUN-2013	18-JUN-2013	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080) SP06_01_040613, SP06_09_040613,	SP06_04_040613, DUP_01_040613	04-JUN-2013	11-JUN-2013	18-JUN-2013	✓	12-JUN-2013	18-JUN-2013	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T) QCB01_040613, QCC01_040613	04-JUN-2013	11-JUN-2013	01-DEC-2013	✓	11-JUN-2013	01-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) QCB01_040613, QCC01_040613	04-JUN-2013	----	----	----	11-JUN-2013	18-JUN-2013	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QCA01_040613	04-JUN-2013	11-JUN-2013	18-JUN-2013	✓	11-JUN-2013	18-JUN-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft							
Amber VOC Vial - Sulfuric Acid (EP080) QCA01_040613	04-JUN-2013	11-JUN-2013	18-JUN-2013	✓	11-JUN-2013	18-JUN-2013	✓



## 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(where) 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	1	4	25.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	12	16.7	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	10.0	✗	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	8.3	10.0	✗	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	4	25.0	5.0	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.0	5.0	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	8.3	5.0	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.0	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	8.3	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	ALS QCS3 requirement



Matrix: **WATER** 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)							
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement



## 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
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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 (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	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 (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(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 (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### 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
<b>Duplicate (DUP) RPDs</b>							
EG005T: Total Metals by ICP-AES	EB1313591-001	SP06_01_040613	Lead	7439-92-1	76.2 %	0-20%	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	EB1313591-001	SP06_01_040613	Manganese	7439-96-5	28.8 %	0-20%	RPD exceeds LOR based limits
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP075(SIM)A: Phenolic Compounds	3455761-006	----	2-Methylphenol	95-48-7	125 %	67-124%	Recovery greater than upper control limit
EP075(SIM)A: Phenolic Compounds	3455761-006	----	2,6-Dichlorophenol	87-65-0	131 %	63-124%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Acenaphthylene	208-96-8	138 %	67-118%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Acenaphthene	83-32-9	127 %	83-121%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Fluorene	86-73-7	118 %	76-116%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Anthracene	120-12-7	143 %	70-115%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Fluoranthene	206-44-0	128 %	69-116%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Benz(a)anthracene	56-55-3	145 %	61-120%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Chrysene	218-01-9	125 %	62-119%	Recovery greater than upper control limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	3455761-006	----	Benzo(b)fluoranthene	205-99-2	152 %	49-129%	Recovery greater than upper control limit

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.



Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: SOIL

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Mercury by FIMS	1	12	8.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	1	12	8.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement





## 5. SOIL

### 5.2 ALS SOIL SUITES

ANALYTICAL SUITE CODES	TEST PARAMETER	METHOD REFERENCE	LOR (mg/kg)	PRICE/ SAMPLE (\$)
S-1	7 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn)	USEPA 200.2 (mod) / ICPAES	1-5	28.00
S-2	8 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	USEPA 200.2 /ICP-AES, CV/FIMS /ICPMS	1-5, Hg (0.1)	35.00
S-3	13 Metals (NEPM Suite) (As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Hg)		1-5, Hg (0.1), Ba(10)	42.00
S-18	TPH (C6-C9), TRH(C6-C10)/BTENX plus F1	P&T/HS-GC/MS	<sup>10</sup> , BTENX (0.2-1)	32.00
S-4	TPH/TRH (C6-C36 or 40)/BTENX plus F1	GC/FID, HS/P&T-GC/MS	10-100 BTENX (0.2-1)	56.00
S-9	TPH/TRH(C6-C36 or 40)/BTENX plus VOC	See S-4	See S4, VOC (0.2-5)	130.00
S-14A	PAH/Phenols (16 PAHs & 12 Phenols)	GC/MS - SIM	0.5-2	95.00
S-6	TRH(C6-C40)/BTENX/Pb	See S-4 & S-1		67.00
S-5	TRH(C6-C40)/BTENX plus 8 Metals	See S-4 & S-2		85.00
S-7	TRH(C6-C40)/BTENX /PAH	See S-4 & S14A		96.00
S-7A	TRH(C6-C40)/BTENX /PAH (NSW only)	See S-4 & S14A	See S-4, PAH (0.05)	110.00
S-21	TRH(C6-C40)/BTENX /PAH plus Pb	See S-4, S14A & S-1		102.00
S-26	TRH(C6-C40)/BTENX /PAH plus 8 metals	See S- S-4, S14A & S-2		118.00
S-24	TRH(C6-C40)/BTENX /PAH plus Phenols	See S-4 & S14A		130.00
S-25	TRH(C6-C40)/BTENX /PAH/Phenols & Pb	See S-4, S14A & S-1		136.00
S-27	TRH(C6-C40)/BTENX /PAH/Phenols & 8 metals	See S-4, S14A & S-1		152.00
S-17	TRH(C6-C40)/BTENX /PAH/Phenols/OC/PCB	See S-4, S-14A & S-11		185.00
S-19	TRH(C6-C40)/BTENX /PAH/Phenols/OC/OP/PCB, 8 Metals	See S-4, S-14A, S-13 & S-2		220.00
S-8	TRH(C6-C40)/BTENX /PAH/OC/PCB, 8 metals	See S- S-4, S14A, S-11, & S-2		180.00
S-16	TRH(C6-C40)/BTENX /PAH/OC/PCB, 8 Metals plus OP Pesticides	See S- S-4, S14A, S-2 & S-13		200.00
S-10	TRH(C6-C40)/BTENX /PAH plus VOC	See S-4 & S14A	VOC (0.2-5)	180.00
S-22	TRH(C6-C40)/BTENX /SVOC	See S-4, SVOC-GC/MS	See S-4 SVOC (0.5-5)	215.00
S-23	VOC/SVOC	P&T-GC/MS, GC/MS	0.2-5	280.00
S-11	OC pesticides & PCB	GC/ECD/ECD-MS	0.05-0.2	65.00
S-12	OC/OP Pesticides	GC/ECD/FPD-MS	0.05-0.2	70.00
S-13	OC/OP Pesticides and PCB	GC/ECD/FPD-MS	0.05-0.2	85.00

Note - Metals costs listed include digestion for soils

ALS Suite prices only apply when specific ALS suite 'S' codes are recorded on COCs. Standard LORs apply.

## 16. REGULATORY PACKAGES

### 16.1. REGULATORY PACKAGES

PACKAGE CODES	ANALYTICAL PACKAGE	PRICE/ SAMPLE (\$)
P-7/1	DECCW Table 2: Specific Contaminant Concentration (SCC) values for classifying waste by chemical assessment	1050.00
P-7/2	DECCW Table 2: Leachable concentration (TCLP) values for classifying waste by chemical assessment	638.00
P-8	DECCW Table 2 Note 17: Schedule Chemical Wastes	390.00
P-9/1 P-9/2	Alternative Fuels Reuse Stds - Schedule of Analysis - Predominantly Aqueous Samples Alternative Fuels Reuse Stds - Schedule of Analysis - Predominantly Oil/Sludge Samples	625.00 655.00
P-11/1 P-11/2 P-11/3	DECCW - Environmental Guidelines on Use and Disposal of Biosolids - 1997. Biosolid Analysis Grade A - Ultra trace Option Biosolid Analysis Grade B & C & D - Standard Option Biosolid Analysis - Pathogens & Microbiology	250.00 110.00 1130.00
P-12/1 P-12/2	DECCW Guidelines for Solid Waste Landfill Leachates (RDL) Surface Waters Ground Waters	155.00 150.00
P-13/1 P-13/2 P-13/3	NEPM (1999) Schedule B(1), Soil Investigation Levels (HILs) Table 5A 13 Metals (S-3), Cr VI & S-17 Package 13 Metals (S-3), Cr VI, Total B, Total CN, Free CN & S-17 P-13/2 package plus Total Phosphorus, Total Sulfur & Sulfate (CaPO4 Soluble-NEPM method)	240.00 290.00 310.00
P14	DECCW - Guidelines for Assessing Service Station sites - 1994.	145.00
P-15/1 P-15/2	SA EPA Waste Classification Basic - Soil (ALS S17 + S2) Total Ba, Be, Co, Fe, Mn, Ag, Cr6+, TCN SA EPA Waste Classification Basic - Soil (ALS S17 + S2) Total Ba, Be, Co, Fe, Mn, Ag, Cr6+, TCN plus Halogenated Aliphatics	250.00 310.00
P-16	IWRG621 (previously known as VIC EPA 448.3) - Soil Hazard Categorisation & Management (including ultra-trace organics to meet low level 'fill criteria') (Melbourne only)	300.00
P-17	IWRG621 (previously known as VIC EPA 448.3) - Soil Hazard Categorisation & Management Leachate (ASLP) Full Suite (Melbourne only)	360.00
P-18/1	NSW Excavated Natural Material Exemption 2008 (ENM)	390.00
P-18/2	NSW Recovered Fines Exemption April 2009 - Absolute	550.00
P-18/3	NSW Recovered Fines Exemption April 2009 - Characterisation	400.00
P-18/4	NSW Recovered Aggregate Exemption 2008	190.00
P-19/1 P-19/2 P-19/3	WA Landfill Waste Classification Suites Full suite for WA Waste Classification Metals Suite for WA Waste Classification Short Suite for WA Waste Classification	430.00 65.00 400.00

ALS Package prices only apply when specific ALS 'P' package codes are recorded on COCs.

Please refer to following pages for example Package analyte lists.

## **SAMPLE RECEIPT ADVICE**

**Client:**

URS Australia (NT)  
GPO Box 2005  
Darwin NT 0800

ph: 08 8980 2900  
Fax: 08 8941 3920

Attention: Andrew Piggin

**Sample log in details:**

Your reference:	<b>42213719</b>
Envirolab Reference:	<b>92129</b>
Date received:	12/06/13
Date results expected to be reported:	<b>19/06/13</b>

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Soil
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice
Sampling Date Provided:	YES

**Comments:**

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

**Contact details:**

Please direct any queries to Aileen Hie or Jacinta Hurst  
ph: 02 9910 6200 fax: 02 9910 6201  
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

**CERTIFICATE OF ANALYSIS**

**92129**

**Client:**

**URS Australia (NT)**

GPO Box 2005

Darwin

NT 0800

**Attention:** Andrew Piggin

**Sample log in details:**

Your Reference:

**42213719**

No. of samples:

1 Soil

Date samples received / completed instructions received

12/06/13

/ 12/06/13

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date:

19/06/13

/ 19/06/13

Date of Preliminary Report:

Not issued

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Accredited for compliance with ISO/IEC 17025.

**Tests not covered by NATA are denoted with \*.**

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date extracted	-	13/06/2013
Date analysed	-	16/06/2013
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	<25
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	<25
vTPHC <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	115

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date extracted	-	13/06/2013
Date analysed	-	14/06/2013
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	<50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	<100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	<100
TRH>C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50
TRH>C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50
TRH>C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100
TRH>C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100
Surrogate o-Terphenyl	%	102

PAHs in Soil Our Reference: Your Reference	UNITS -----	92129-1 DUP_02_0406 13
Date Sampled Type of sample Sample Matrix Code Time Sampled	-----	4/06/2013 Soil SO 00:00
Date extracted	-	13/06/2013
Date analysed	-	14/06/2013
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Benzo(a)pyrene TEQ NEPMB1	mg/kg	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	107

Organochlorine Pesticides in soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date extracted	-	13/06/2013
Date analysed	-	14/06/2013
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCMX	%	90



PCBs in Soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date extracted	-	13/06/2013
Date analysed	-	14/06/2013
Arochlor 1016	mg/kg	<0.1
Arochlor 1221	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	90

Total Phenolics in Soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date extracted	-	18/06/2013
Date analysed	-	19/06/2013
Total Phenolics (as Phenol)	mg/kg	<5

Acid Extractable metals in soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date digested	-	13/06/2013
Date analysed	-	13/06/2013
Arsenic	mg/kg	7
Barium	mg/kg	67
Beryllium	mg/kg	<1
Cadmium	mg/kg	0.8
Chromium	mg/kg	38
Cobalt	mg/kg	3
Copper	mg/kg	38
Manganese	mg/kg	120
Nickel	mg/kg	8
Lead	mg/kg	88
Vanadium	mg/kg	60
Zinc	mg/kg	150
Mercury	mg/kg	<0.1

Miscellaneous Inorg - soil		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date prepared	-	13/06/2013
Date analysed	-	13/06/2013
Hexavalent Chromium, Cr <sup>6+</sup>	mg/kg	<1

Moisture		
Our Reference:	UNITS	92129-1
Your Reference	-----	DUP_02_0406
		13
Date Sampled	-----	4/06/2013
Type of sample		Soil
Sample Matrix Code		SO
Time Sampled		00:00
Date prepared	-	13/06/13
Date analysed	-	14/06/13
Moisture	%	11

MethodID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-030	Total Phenolics - determined colorimetrically following distillation, based upon APHA 22nd ED 5530 D.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically based upon APHA 22nd, 3500-Cr-B.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 4 hours.

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			13/06/2013	[NT]	[NT]	LCS-2	13/06/2013
Date analysed	-			16/06/2013	[NT]	[NT]	LCS-2	16/06/2013
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	115%
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	115%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-2	126%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-2	111%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-2	115%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-2	112%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-2	119%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	102	[NT]	[NT]	LCS-2	114%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			13/06/2013	[NT]	[NT]	LCS-1	13/06/2013
Date analysed	-			14/06/2013	[NT]	[NT]	LCS-1	14/06/2013
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	104%
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	112%
TRHC <sub>28</sub> - C <sub>36</sub>	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	85%
TRH>C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	104%
TRH>C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	112%
TRH>C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	85%
Surrogate o-Terphenyl	%		Org-003	93	[NT]	[NT]	LCS-1	100%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			13/06/2013	[NT]	[NT]	LCS-2	13/06/2013
Date analysed	-			14/06/2013	[NT]	[NT]	LCS-2	14/06/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	100%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	112%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	96%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	96%

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	105%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	93%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-2	115%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	97	[NT]	[NT]	LCS-2	114%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
Date extracted	-			13/06/2013	[NT]	[NT]	LCS-2	13/06/2013
Date analysed	-			14/06/2013	[NT]	[NT]	LCS-2	14/06/2013
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	91%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	85%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	84%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	90%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	90%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	86%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	90%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	81%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	86%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	89%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	89	[NT]	[NT]	LCS-2	84%



QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			13/06/2013	[NT]	[NT]	LCS-2	13/06/2013
Date analysed	-			14/06/2013	[NT]	[NT]	LCS-2	14/06/2013
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-2	102%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	89	[NT]	[NT]	LCS-2	85%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Soil						Base II Duplicate II %RPD		
Date extracted	-			18/06/2013	[NT]	[NT]	LCS-1	18/06/2013
Date analysed	-			19/06/2013	[NT]	[NT]	LCS-1	19/06/2013
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	[NT]	[NT]	LCS-1	96%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			13/06/2013	[NT]	[NT]	LCS-1	13/06/2013
Date analysed	-			13/06/2013	[NT]	[NT]	LCS-1	13/06/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	101%
Barium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	113%
Beryllium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	108%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-1	113%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	107%
Cobalt	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	108%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	107%
Manganese	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	114%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	109%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	104%
Vanadium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	102%

Client Reference: 42213719

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	106%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	90%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorg - soil						Base II Duplicate II %RPD		
Date prepared	-			13/06/2013	[NT]	[NT]	LCS-1	13/06/2013
Date analysed	-			13/06/2013	[NT]	[NT]	LCS-1	13/06/2013
Hexavalent Chromium, Cr <sup>6+</sup>	mg/kg	1	Inorg-024	<1	[NT]	[NT]	LCS-1	98%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank				
Moisture								
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Moisture	%	0.1	Inorg-008	[NT]				

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

**Quality Control Definitions**

**Blank:** This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

**Duplicate:** This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

**Matrix Spike :** A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

**LCS (Laboratory Control Sample) :** This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

**Surrogate Spike:** Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

**Laboratory Acceptance Criteria**

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

URS

## CHAIN OF CUSTODY - DARWIN WATERFRONT PROJECT

FOR LABORATORY USE ONLY

ADDRESS: URS Australia

Level 3, 93 Mitchell Street  
GPO Box 2005  
Darwin, Northern Territory 0800

All results to be provided in MRPD format

jim.smith@urs.com, darwin@urs.com,  
bek.aagaard@urs.com  
andrew.piggitt@urs.com

Custody Seal? Y N NA

Free ice / frozen icebricks

present upon receipt? Y N

Random Sample Temperature  
on Receipt OC

PHONE NO:

08 6900 2900  
08 6941 3920

PHONE NO:

02 6764 8555  
02 6764 8500TURNAROUND DETAILS  
Sid 5 Day TAT\*\*COC SEQUENCE NUMBER  
1 2 3 4

FAX NO:

URS PROJECT NO:

42213719

Contract No.

URS CONTACT:

Bek Aagaard

RELINQUISHED BY:

C. Aagaard

RECEIVED BY:

DATE: 22/08/13 TIME: 1:00

RELINQUISHED BY:

DATE:

TIME:

URS SAMPLES:

Bek Aagaard and Tim Smith

COMMENTS:

Please contact Bek for any queries 0423 350 069

An extra jar has been supplied in case more sample is  
needed for analysis (labelled Leach01B\_220813 to  
03B\_220813)

SAMPLE DETAILS				CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Batch No	SAMPLE Location	SAMPLE ID	DATE	MATRIX (Solid / Liquid)	Liquid																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
1		Leach 01_220813	22/8/13	Soil																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

Total Containers

TCLP (Pb, Cu, Zn, Fe, Mn)

P-13/1

S1 + Fe and Mn

W18

W1 + Fe and Mn

HOLD

Environmental Division  
Sydney

Work Order

ES1318728



Telephone : +61-2-8764 8555

Received by:

David  
23/8  
0800

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **ES1318728**

Client : **URS AUSTRALIA PTY LTD**  
 Contact : **MR ANDREW PIGGIN**  
 Address : Supplier ID number - 1179447  
 G P O BOX 2005  
 DARWIN NT, AUSTRALIA 0801

Laboratory : Environmental Division Sydney  
 Contact : Loren Schiavon  
 Address : 277-289 Woodpark Road Smithfield  
 NSW Australia 2164

E-mail : andrew.piggin@urs.com  
 Telephone : +61 89802900  
 Facsimile : +61 08 89413920

E-mail : loren.schiavon@alsglobal.com  
 Telephone : +61 2 8784 8503  
 Facsimile : +61 2 8784 8500

Project : 42213719  
 Order number : ----  
 C-O-C number : ----  
 Site : ----  
 Sampler : BA/TS

Page : 1 of 3  
 Quote number : ES2012URSNT0270 (EN/001/12)  
 QC Level : NEPM 2013 Schedule B(3) and ALS  
 QCS3 requirement

### Dates

Date Samples Received : 23-AUG-2013  
 Client Requested Due Date : 29-AUG-2013

Issue Date : 23-AUG-2013 12:20  
 Scheduled Reporting Date : **29-AUG-2013**

### Delivery Details

Mode of Delivery : Carrier  
 No. of coolers/boxes : 1 HARD  
 Security Seal : Intact.

Temperature : 0.6°C - Ice present  
 No. of samples received : 9  
 No. of samples analysed : 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exist.

## 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - P-13/1 (ES) NEPM Table 5A (Sydney Lab)	SOIL - S-01 7 Metals (incl. Digestion)	SOIL - TCLP TCLP Leach
ES1318728-001	22-AUG-2013 15:00	LEACH 01_220813	✓	✓		✓	✓
ES1318728-002	22-AUG-2013 15:00	LEACH 02_220813	✓	✓		✓	✓
ES1318728-003	22-AUG-2013 15:00	LEACH 03_220813	✓	✓		✓	✓
ES1318728-004	22-AUG-2013 15:00	HC01_220813			✓		
ES1318728-005	22-AUG-2013 15:00	HC02_220813			✓		
ES1318728-006	22-AUG-2013 15:00	HC03_220813			✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - W-01 7 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1318728-007	22-AUG-2013 15:00	QCA01_220813			✓
ES1318728-008	22-AUG-2013 15:00	QCB01_220813			✓
ES1318728-009	22-AUG-2013 15:00	QCC01_220813	✓	✓	✓

## Proactive Holding Time Report

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

[illegible]

## Environmental Division

# CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1318728</b>	Page	: 1 of 13
Client	: <b>URS AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: MR ANDREW PIGGIN	Contact	: Loren Schiavon
Address	: Supplier ID number - 1179447 G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: andrew.piggin@urs.com	E-mail	: loren.schiavon@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61 2 8784 8503
Facsimile	: +61 08 89413920	Facsimile	: +61 2 8784 8500
Project	: 42213719	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 23-AUG-2013
C-O-C number	: ----	Issue Date	: 29-AUG-2013
Sampler	: BA/TS	No. of samples received	: 9
Site	: ----	No. of samples analysed	: 9
Quote number	: EN/001/12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits





## 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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

- **EG020: Positive Zinc result for sample ES1318728 #009 has been confirmed by re-analysis.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
		Sydney Inorganics
Edwandy Fadjjar	Organic Coordinator	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LEACH 01_220813	LEACH 02_220813	LEACH 03_220813	HC01_220813	HC02_220813
				22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00
Compound	CAS Number	LOR	Unit	ES1318728-001	ES1318728-002	ES1318728-003	ES1318728-004	ES1318728-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.5	17.8	19.7	17.4	19.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	----	----	6	<5
Barium	7440-39-3	10	mg/kg	----	----	----	80	100
Beryllium	7440-41-7	1	mg/kg	----	----	----	<1	<1
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	31	42
Cobalt	7440-48-4	2	mg/kg	----	----	----	2	2
Copper	7440-50-8	5	mg/kg	----	----	----	28	36
Iron	7439-89-6	50	mg/kg	39800	42400	48600	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	50	27
Manganese	7439-96-5	5	mg/kg	69	70	65	130	140
Nickel	7440-02-0	2	mg/kg	----	----	----	9	8
Vanadium	7440-62-2	5	mg/kg	----	----	----	59	54
Zinc	7440-66-6	5	mg/kg	----	----	----	94	96
Arsenic	7440-38-2	5	mg/kg	6	9	16	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	38	48	61	----	----
Copper	7440-50-8	5	mg/kg	17	19	22	----	----
Lead	7439-92-1	5	mg/kg	36	48	199	----	----
Nickel	7440-02-0	2	mg/kg	8	6	5	----	----
Zinc	7440-66-6	5	mg/kg	96	141	148	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	<0.1
<b>EG048: Hexavalent Chromium (Alkaline Digest)</b>								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EN33: TCLP Leach</b>								
Initial pH	----	0.1	pH Unit	9.1	8.6	8.9	----	----
After HCl pH	----	0.1	pH Unit	1.8	1.7	1.7	----	----
Extraction Fluid Number	----	1	-	1	1	1	----	----
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LEACH 01_220813	LEACH 02_220813	LEACH 03_220813	HC01_220813	HC02_220813
				22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00
Compound	CAS Number	LOR	Unit	ES1318728-001	ES1318728-002	ES1318728-003	ES1318728-004	ES1318728-005
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	<0.2
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	----	----	----	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	----	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	----	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	----	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	----	<0.5	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	----	----	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	----	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	----	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	----	----	----	<2	<2



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LEACH 01_220813	LEACH 02_220813	LEACH 03_220813	HC01_220813	HC02_220813
				22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00
Compound	CAS Number	LOR	Unit	ES1318728-001	ES1318728-002	ES1318728-003	ES1318728-004	ES1318728-005
<b>EP075(SIM)A: Phenolic Compounds - Continued</b>								
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	<0.5
Acenaphthene	83-32-9	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)fluoranthene	205-99-2	0.5	mg/kg	----	----	----	<0.5	<0.5
Benzo(k)fluoranthene	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
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	<50
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
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	<10
>C10 - C16 Fraction	>C10_C16	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



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LEACH 01_220813	LEACH 02_220813	LEACH 03_220813	HC01_220813	HC02_220813
				22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00
Compound	CAS Number	LOR	Unit	ES1318728-001	ES1318728-002	ES1318728-003	ES1318728-004	ES1318728-005
<b>EP080: BTEX</b>								
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
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP080: BTEXN</b>								
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	98.0	85.0
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	108	86.5
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	----	----	----	107	84.0
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	----	87.2	86.9
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	92.5	97.7
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	----	92.9	98.2
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	100	106
Anthracene-d10	1719-06-8	0.1	%	----	----	----	92.1	97.1
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	93.5	99.2
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	84.2	94.6
Toluene-D8	2037-26-5	0.1	%	----	----	----	94.8	102
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	89.6	94.7



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

HC03\_220813

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Client sampling date / time

22-AUG-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1318728-006	----	----	----	----
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### EA055: Moisture Content

Moisture Content (dried @ 103°C)	----	1.0	%	14.5	----	----	----	----
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### EG005T: Total Metals by ICP-AES

Arsenic	7440-38-2	5	mg/kg	6	----	----	----	----
Barium	7440-39-3	10	mg/kg	140	----	----	----	----
Beryllium	7440-41-7	1	mg/kg	<1	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	30	----	----	----	----
Cobalt	7440-48-4	2	mg/kg	2	----	----	----	----
Copper	7440-50-8	5	mg/kg	44	----	----	----	----
Lead	7439-92-1	5	mg/kg	63	----	----	----	----
Manganese	7439-96-5	5	mg/kg	171	----	----	----	----
Nickel	7440-02-0	2	mg/kg	8	----	----	----	----
Vanadium	7440-62-2	5	mg/kg	54	----	----	----	----
Zinc	7440-66-6	5	mg/kg	148	----	----	----	----

### EG035T: Total Recoverable Mercury by FIMS

Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
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### EG048: Hexavalent Chromium (Alkaline Digest)

Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
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### EP066: Polychlorinated Biphenyls (PCB)

Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
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### EP068A: Organochlorine Pesticides (OC)

alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				HC03_220813	----	----	----	----
				22-AUG-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1318728-006	----	----	----	----
<b>EP068A: Organochlorine Pesticides (OC) - Continued</b>								
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	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)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

HC03\_220813

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Client sampling date / time

22-AUG-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1318728-006	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benzo(k)fluoranthene	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	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	>C10_C16	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	----	----	----	----
<b>EP080: BTEX</b>								
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	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
<b>EP080: BTEXN</b>								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	96.0	----	----	----	----





## Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

**HC03\_220813**

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Client sampling date / time

22-AUG-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1318728-006	----	----	----	----
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.1	%	92.8	----	----	----	----
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.1	%	87.8	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	84.7	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	89.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	88.6	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	95.8	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	87.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	90.5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	86.0	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	96.9	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	87.3	----	----	----	----



Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)

Client sample ID

				LEACH 01_220813	LEACH 02_220813	LEACH 03_220813	----	----
Client sampling date / time				27-AUG-2013 12:00	27-AUG-2013 12:00	27-AUG-2013 12:00	----	----
Compound	CAS Number	LOR	Unit	ES1318728-001	ES1318728-002	ES1318728-003	----	----
EG005C: Leachable Metals by ICPAES								
Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Iron	7439-89-6	0.1	mg/L	0.1	0.6	0.3	----	----
Lead	7439-92-1	0.1	mg/L	0.4	<0.1	1.7	----	----
Manganese	7439-96-5	0.1	mg/L	0.5	0.8	0.7	----	----
Zinc	7440-66-6	0.1	mg/L	0.4	0.5	1.8	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				QCA01_220813	QCB01_220813	QCC01_220813	----	----
				22-AUG-2013 15:00	22-AUG-2013 15:00	22-AUG-2013 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1318728-007	ES1318728-008	ES1318728-009	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	<b>0.044</b>	----	----
Lead	7439-92-1	0.001	mg/L	----	----	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	----	----	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	----	----
Iron	7439-89-6	0.05	mg/L	----	----	<0.05	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	----	----
Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	<b>109</b>	<b>104</b>	<b>117</b>	----	----
Toluene-D8	2037-26-5	0.1	%	<b>112</b>	<b>104</b>	<b>122</b>	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	<b>106</b>	<b>97.8</b>	<b>112</b>	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP068S: Organochlorine Pesticide Surrogate</b>			
Dibromo-DDE	21655-73-2	49	147
<b>EP068T: Organophosphorus Pesticide Surrogate</b>			
DEF	78-48-8	35	143
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

## Environmental Division

# QUALITY CONTROL REPORT

Work Order	: <b>ES1318728</b>	Page	: 1 of 16
Client	: <b>URS AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: MR ANDREW PIGGIN	Contact	: Loren Schiavon
Address	: Supplier ID number - 1179447 G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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Project	: 42213719	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 23-AUG-2013
C-O-C number	: ----	Issue Date	: 29-AUG-2013
Sampler	: BA/TS	No. of samples received	: 9
Order number	: ----	No. of samples analysed	: 9
Quote number	: EN/001/12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
		Sydney Inorganics
Edwandy Fadjjar	Organic Coordinator	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics

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%.

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3030012)</b>									
ES1318700-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.0	17.3	3.9	0% - 50%
ES1318728-005	HC02_220813	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.8	19.3	3.0	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3031665)</b>									
ES1318693-021	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	130	120	0.0	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	29	28	0.0	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	5	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	10	16.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	9.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	19	21	12.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	31	32	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	105	108	2.6	0% - 20%
		EG005T: Vanadium	7440-62-2	5	mg/kg	60	63	3.9	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	78	84	7.1	0% - 50%
		EG005T: Iron	7439-89-6	50	mg/kg	45800	46900	2.4	0% - 20%
ES1318853-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	40	30	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	21	22	0.0	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	9	10	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	10	8	22.1	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	3800	3960	4.1	0% - 20%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3031666)</b>									
ES1318693-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1318853-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 3032278)</b>									
ES1318728-004	HC01_220813	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3030867)</b>									



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 (%)		
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3030867) - continued											
ES1318728-004	HC01_220813	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3030868)											
ES1318728-004	HC01_220813	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit				
EP075(SIM)A: Phenolic Compounds (QC Lot: 3029070)											
ES1318684-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
		ES1318716-002	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	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 (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 3029070) - continued									
ES1318716-002	Anonymous	EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3029070)									
ES1318684-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	0.8	0.7	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.8	0.7	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.8	0.8	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	4.1	3.3	21.6	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.7	0.7	0.0	No Limit
ES1318716-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	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 (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3029070) - continued									
ES1318716-002	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3028509)									
ES1318684-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1318716-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3029069)									
ES1318684-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1318716-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3028509)									
ES1318684-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1318716-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3029069)									
ES1318684-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1318716-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 3028509)									
ES1318684-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1318716-001	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3028509) - continued									
ES1318716-001	Anonymous	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 3032814)									
ES1318445-002	Anonymous	EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Iron	7439-89-6	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Manganese	7439-96-5	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.1	0.1	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3030689)									
ES1318684-014	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.006	0.007	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES1318811-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.225	0.214	5.2	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	55.1	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.017	0.017	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	3.54	3.40	4.0	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3027935)									
ES1318756-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1318757-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3027935)									
ES1318756-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1318757-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3027935)									
ES1318756-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit

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 Project : 42213719



Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3027935) - continued</b>									
ES1318756-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES1318757-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	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 Sample (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**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3031665)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	111	87	129
EG005T: Barium	7440-39-3	10	mg/kg	<10	143 mg/kg	112	83	129
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	5.63 mg/kg	111	88	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	107	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	115	71	133
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	16.0 mg/kg	109	84	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	110	86	128
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	100	70	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	114	81	123
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	118	85	127
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	119	84	130
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	29.6 mg/kg	113	95	129
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	115	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3031666)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.7	66	112
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3032278)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	85.7	62	122
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3030867)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	109	57.4	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 3030868)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	97.6	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	103	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	97.6	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.9	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.7	65	113
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.8	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	102	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	69	119
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.8	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	66	118
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	110	67	123



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 3030868) - continued								
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	76	120
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	108	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	60	124
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	101	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	102	65	129
EP075(SIM)A: Phenolic Compounds (QCLot: 3029070)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	89.0	74	116
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	91.8	74	116
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	90.3	72	116
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	88.4	69	123
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	87.2	60.3	117
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	96.8	69	117
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	90.8	68	112
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	93.2	73	117
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	102	76.4	114
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	86.7	57	111
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	89.3	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	36.9	3.9	57
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3029070)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	102	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	102	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	103	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	102	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	102	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	99.0	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	103	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	104	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	102	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	104	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	93.9	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	104	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	102	76	122
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	87.5	71	113
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	84.0	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	91.2	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3028509)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	101	68.4	128



Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 3032814)								
EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	0.1 mg/L	99.8	83	115
EG005C: Iron	7439-89-6	0.1	mg/L	<0.1	0.5 mg/L	106	80	120
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	105	83	117
EG005C: Manganese	7439-96-5	0.1	mg/L	<0.1	0.1 mg/L	106	82	114
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	0.1 mg/L	105	79	123
EG020F: Dissolved Metals by ICP-MS (QCLot: 3030689)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.2	80	118
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	82	112
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	81	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	80	112
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.8	83	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	81	113
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.4	81	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	80	116
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	77	115
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3027935)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3027935) - continued</b>								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	85.2	75	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3027935)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	86.7	75	127
<b>EP080: BTEXN (QCLot: 3027935)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	103	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.9	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	96.2	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.9	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	83.1	70	124

## 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**

Sub-Matrix: <b>SOIL</b>				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: 3031665)							
ES1318693-021	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	111	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	109	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	106	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	115	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	114	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	104	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3031666)							
ES1318693-021	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	106	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3032278)							
ES1318728-004	HC01_220813	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	90.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3030867)							
ES1318728-004	HC01_220813	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	93.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3030868)							
ES1318728-004	HC01_220813	EP068: gamma-BHC	58-89-9	0.5 mg/kg	108	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	104	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	104	70	130



Sub-Matrix: <b>WATER</b>				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 3032814)							



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 3032814) - continued							
ES1318728-001	LEACH 01_220813	EG005C: Copper	7440-50-8	1 mg/L	117	70	130
		EG005C: Lead	7439-92-1	1 mg/L	116	70	130
		EG005C: Manganese	7439-96-5	1 mg/L	116	70	130
		EG005C: Zinc	7440-66-6	1 mg/L	119	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 3030689)							
ES1318684-014	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	107	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	110	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	108	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	108	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	107	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	106	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	106	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3027935)							
ES1318756-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	82.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3027935)							
ES1318756-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	80.0	70	130
EP080: BTEXN (QCLot: 3027935)							
ES1318756-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	83.8	70	130
		EP080: Toluene	108-88-3	25 µg/L	88.6	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	89.2	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	86.9	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	92.2	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	88.2	70	130

## Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3028509)</b>									
ES1318684-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	119	----	70	130	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3028509)</b>									
ES1318684-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	121	----	70	130	----



Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
EP080: BTEXN (QCLot: 3028509)										
ES1318684-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	90.5	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	108	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.0	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	99.2	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	99.4	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	100	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3029069)										
ES1318684-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	84.9	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	87.8	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	79.1	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3029069)										
ES1318684-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	116	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	74.8	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	58.1	----	52	132	----	----
EP075(SIM)A: Phenolic Compounds (QCLot: 3029070)										
ES1318684-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	87.0	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	87.3	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	85.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	93.1	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	57.6	----	20	130	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3029070)										
ES1318684-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	96.5	----	70	130	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3030867)										
ES1318728-004	HC01_220813	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	93.0	----	70	130	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 3030868)										
ES1318728-004	HC01_220813	EP068: gamma-BHC	58-89-9	0.5 mg/kg	108	----	70	130	----	----
		EP068: Heptachlor	76-44-8	0.5 mg/kg	104	----	70	130	----	----
		EP068: Aldrin	309-00-2	0.5 mg/kg	104	----	70	130	----	----
		EP068: Dieldrin	60-57-1	0.5 mg/kg	100	----	70	130	----	----
		EP068: Endrin	72-20-8	2 mg/kg	92.4	----	70	130	----	----
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	86.9	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3031665)										
ES1318693-021	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	111	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	109	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	106	----	70	130	----	----
		EG005T: Copper	7440-50-8	250 mg/kg	115	----	70	130	----	----

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 Project : 42213719



Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG005T: Total Metals by ICP-AES (QCLot: 3031665) - continued										
ES1318693-021	Anonymous	EG005T: Lead	7439-92-1	250 mg/kg	114	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	103	----	70	130	----	----
		EG005T: Zinc	7440-66-6	250 mg/kg	104	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3031666)										
ES1318693-021	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	106	----	70	130	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3032278)										
ES1318728-004	HC01_220813	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	90.0	----	70	130	----	----
Sub-Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3027935)										
ES1318756-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	82.1	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3027935)										
ES1318756-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	80.0	----	70	130	----	----
EP080: BTEXN (QCLot: 3027935)										
ES1318756-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	83.8	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	88.6	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	89.2	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	86.9	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	92.2	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	88.2	----	70	130	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3030689)										
ES1318684-014	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	----	70	130	----	----
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	107	----	70	130	----	----
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	110	----	70	130	----	----
		EG020A-F: Copper	7440-50-8	0.2 mg/L	108	----	70	130	----	----
		EG020A-F: Lead	7439-92-1	0.2 mg/L	108	----	70	130	----	----
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	107	----	70	130	----	----
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	106	----	70	130	----	----
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	106	----	70	130	----	----
EG005C: Leachable Metals by ICPAES (QCLot: 3032814)										
ES1318728-001	LEACH 01_220813	EG005C: Copper	7440-50-8	1 mg/L	117	----	70	130	----	----
		EG005C: Lead	7439-92-1	1 mg/L	116	----	70	130	----	----
		EG005C: Manganese	7439-96-5	1 mg/L	116	----	70	130	----	----
		EG005C: Zinc	7440-66-6	1 mg/L	119	----	70	130	----	----

## Environmental Division

# INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1318728</b>	Page	: 1 of 9
Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR ANDREW PIGGIN	Contact	: Loren Schiavon
Address	: Supplier ID number - 1179447 G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: andrew.piggin@urs.com	E-mail	: loren.schiavon@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61 2 8784 8503
Facsimile	: +61 08 89413920	Facsimile	: +61 2 8784 8500
Project	: 42213719	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 23-AUG-2013
C-O-C number	: ----	Issue Date	: 29-AUG-2013
Sampler	: BA/TS	No. of samples received	: 9
Order number	: ----	No. of samples analysed	: 9
Quote number	: EN/001/12		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) LEACH 01_220813, LEACH 03_220813, HC02_220813,	LEACH 02_220813, HC01_220813, HC03_220813	22-AUG-2013	----	----	----	26-AUG-2013	05-SEP-2013	✓
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) LEACH 01_220813, LEACH 03_220813	LEACH 02_220813,	27-AUG-2013	28-AUG-2013	23-FEB-2014	✓	28-AUG-2013	23-FEB-2014	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) LEACH 01_220813, LEACH 03_220813, HC02_220813,	LEACH 02_220813, HC01_220813, HC03_220813	22-AUG-2013	27-AUG-2013	18-FEB-2014	✓	28-AUG-2013	18-FEB-2014	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	27-AUG-2013	19-SEP-2013	✓	28-AUG-2013	19-SEP-2013	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	28-AUG-2013	19-SEP-2013	✓	28-AUG-2013	04-SEP-2013	✓
EN33: TCLP Leach								
Lab Split: Leach for metals excl. Hg (EN33a) LEACH 01_220813, LEACH 03_220813	LEACH 02_220813,	22-AUG-2013	---	18-FEB-2014	----	27-AUG-2013	18-FEB-2014	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	27-AUG-2013	05-SEP-2013	✓	28-AUG-2013	06-OCT-2013	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	27-AUG-2013	05-SEP-2013	✓	28-AUG-2013	06-OCT-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP071) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	27-AUG-2013	05-SEP-2013	✓	27-AUG-2013	06-OCT-2013	✓
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	27-AUG-2013	05-SEP-2013	✓	27-AUG-2013	06-OCT-2013	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	27-AUG-2013	05-SEP-2013	✓	27-AUG-2013	06-OCT-2013	✓
EP080: BTEX								
Soil Glass Jar - Unpreserved (EP080) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	26-AUG-2013	05-SEP-2013	✓	26-AUG-2013	05-SEP-2013	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	26-AUG-2013	05-SEP-2013	✓	26-AUG-2013	05-SEP-2013	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080) HC01_220813, HC03_220813	HC02_220813,	22-AUG-2013	26-AUG-2013	05-SEP-2013	✓	26-AUG-2013	05-SEP-2013	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F)		22-AUG-2013	---	18-FEB-2014	----	27-AUG-2013	18-FEB-2014	✓
QCC01_220813								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)		22-AUG-2013	23-AUG-2013	05-SEP-2013	✓	23-AUG-2013	05-SEP-2013	✓
QCA01_220813,								
QCC01_220813								



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080) QCA01_220813, QCC01_220813	QCB01_220813, 22-AUG-2013	23-AUG-2013	05-SEP-2013	✔	23-AUG-2013	05-SEP-2013	✔





## 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(where) 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	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	16	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** 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)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	4	25.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## 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
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Leachable Metals by ICPAES	EG005C	SOIL	APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) 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	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 SnCl <sub>2</sub> 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	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) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) 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)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) 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 504,505)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	(USEPA SW846-1311, ALS QWI-EN/33) The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(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 (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8



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## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### *Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### *Regular Sample Surrogates*

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

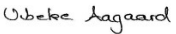

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

## **Attachment C**

# DATA VALIDATION REPORT January 2013

<b>URS Project number:</b>	42213719	<b>Data verified by:</b>	Bek Aagaard	<b>Date:</b>	14/08/2013
<b>Client:</b>	Darwin Waterfront Corporation				
<b>Site:</b>	Waterfront Precinct	<b>Signed:</b>			
<b>URS Project Manager:</b>	Jacques van Rensburg	<b>Validation by:</b>	Tim Smith	<b>Date:</b>	12/8 /2013
<b>Matrix type:</b>	Soil	<b>Signed:</b>			
<b>No Primary samples:</b>	14	<b>Project Manager:</b>	Jacques van Rensburg		
<b>Laboratory:</b>	ALS				
<b>Lab reference:</b>	ES13000953				

## Data quality objectives

Field data comparison	No apparent anomalies were observed between laboratory results and field observations.
Frequency of field QC	Field QC samples were collected to project specifications with the exception of no field triplicate sample was collected. Fourteen primary samples were collected in total.
Frequency of laboratory QC	<p>The laboratory reported a sufficient frequency of QC to assess whether the results have been reported to an acceptable accuracy and precision, with the exception of the following:</p> <ul style="list-style-type: none"> <li>The laboratory duplicate was not analysed for total polychlorinated biphenyls. The precision of this data can be assessed as acceptable based on the presence of intra and inter-laboratory field duplicates for total polychlorinated biphenyls.</li> </ul>
Tests requested/reported	Samples were analysed and reported as requested on the COC.
Limits of reporting	LORs were sufficiently low to enable assessment against adopted guideline criteria.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by URS.

## Sample management

Chain of Custody	Chain of custody documents completed.
Handling and preservation	<p>Samples were transported with ice bricks and were received at 10.5°C in batch ES1300953. Samples from batch ES1300953 were received above the recommended temperature range; therefore, some losses through volatilisation may have occurred and sample concentrations for BTEXN and TPH C<sub>6</sub> – C<sub>9</sub> (and other volatiles) may be biased low.</p> <p>It should be noted that the ambient temperature across the site throughout the year and at the time of sampling is &gt;30°C. Samples are chilled in the field on ice and transported to the laboratory with appropriate cooling medium. Samples remain chilled while cooling medium is present; however, over the 24 hr transit period to the laboratory cooling medium will melt and samples may warm. Due to the initial sample temperature and subsequent appropriate cooling of samples, losses due to volatilisation are considered to be limited.</p>

## Data precision

Field duplicate RPDs	<p>Field duplicate RPDs exceeded control limits for the following sample analysis. (Samples with higher reported concentrations are in bold).</p> <ul style="list-style-type: none"> <li>EXED08_110113 and <b>QC01_110113</b> for Chromium (53%); and</li> <li><b>EXED08_110113</b> and QC01_110113 for Zinc (38%).</li> </ul> <p>Elevated RPDs are common in soil samples and this apparent lack of precision is likely due to heterogeneity of the distribution of metals in soils at the site. However, care should be taken when interpreting results for zinc, where close to guidelines. As there is no adopted guideline for chromium, this is not considered to affect the interpretation of the results for these analytes.</p>
Field triplicate RPDs	NA
Laboratory duplicate RPDs	Laboratory duplicate RPDs were within control limits.

## Data accuracy

Laboratory control spike recovery	Laboratory control spike recoveries were within control limits.
Matrix spike recovery	The following recoveries were outside control limits and may affect data interpretation:

Sample	Analyte	Recovery (%)	LCL (%)	UCL (%)	Comment
Anonymous	Hexavalent Chromium	Not determined	-	-	Matrix spike recovery not determined, due to sample matrix interferences
EX01_110113_06	Hexavalent Chromium	57.5	70	130	Recovery less than the lower data quality objective

Matrix spike recoveries were reported less than the lower data quality objective for hexavalent chromium by up to 12%; hence, there is potential for reported concentrations of hexavalent chromium to be biased low by up to 48%. As ILs have been adopted for hexavalent chromium, care should be taken with interpreting results close to the adopted guidelines. As hexavalent chromium is reported below LOR, this is not considered to affect the interpretation of the results for this analyte.

The matrix spike for hexavalent chromium was not determined due to sample matrix interferences. However the accuracy of the results for hexavalent chromium are assessed as acceptable, due to the presence of other laboratory quality control data, including method blanks, LCS recoveries and matrix spikes for analytes analysed under the same analytical method.

Surrogate spike recovery

The surrogate spike recoveries were within control limits.

#### Blank monitoring

Rinsate blank

N/A

Field blank

N/A

Trip blank

N/A

Method blank

#### Chromatograms

N/A

#### Other observations

##### Batch ES1300953

- EG048G: Spike failed for Hexavalent Chromium analysis due to matrix interferences
- EP066 : Particular samples # EXBOT01\_11/1/13 , # EXBOT02\_11/1/13 and # EX01\_110113\_07 suspected alochlor 1254 positive PCB. Confirmed by reextraction and reanalysis.



Site Name - Waterfront Stage 2A  
Project No. - 42213719  
Project Manager - Jacques van Rensburg  
Matrix - Soil  
Laboratory - ALS  
Batch File Number - ES1300953

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 per group)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
INSTRUMENT LABORATORY (NON-METALL	Hexavalent Chromium	15	15	14	✓	✓	0	0	0	0	0	0	1	2	1	1	1	0	2	4	1	2	1	2	✓	-
VOLATILES ANALYSIS/ALS/EP080	Benzene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Ethylbenzene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	meta- & para-Xylene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Naphthalene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	ortho-Xylene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Toluene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
VOLATILES ANALYSIS/ALS/EP080/071	C6 - C10 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	C6 - C9 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
SEMIVOLATILES ANALYSIS/ALS/EP080/071	<C10 - C16 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	>C16 - C34 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	>C34 - C40 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	C10 - C14 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	C15 - C28 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	C29 - C36 Fraction	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
SEMIVOLATILES ANALYSIS/ALS/EP075(SIM)	Acenaphthene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Acenaphthylene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Anthracene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Benz(a)anthracene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Benzo(a)pyrene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Benzo(b)fluoranthene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Benzo(g,h,i)perylene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Benzo(k)fluoranthene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Chrysene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Dibenz(a,h)anthracene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Fluoranthene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Fluorene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Indeno(1,2,3-cd)pyrene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Naphthalene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Phenanthrene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Pyrene	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
SEMIVOLATILES ANALYSIS/ALS/EP075(SIM)	2,4,5-Trichlorophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	2,4,6-Trichlorophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	2,4-Dichlorophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	2,4-Dimethylphenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	2,6-Dichlorophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	2-Chlorophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	2-Methylphenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	2-Nitrophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	3- & 4-Methylphenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	4-Chloro-3-Methylphenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Pentachlorophenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Phenol	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
SEMIVOLATILES ANALYSIS/ALS/EP068A	4,4'-DDD	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	4,4'-DDE	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	4,4'-DDT	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Aldrin	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	alpha-BHC	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	alpha-Endosulfan	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	beta-BHC	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	beta-Endosulfan	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	cis-Chlordane	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	delta-BHC	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Dieldrin	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Endosulfan sulfate	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Endrin	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Endrin aldehyde	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Endrin ketone	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	gamma-BHC	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Heptachlor	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	✓
	Heptachlor epoxide	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Hexachlorobenzene (HCB)	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	Methoxychlor	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓
	trans-Chlordane	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	✓

Site Name - Waterfront Stage 2A  
Project No. - 42213719  
Project Manager - Jacques van Rensburg  
Matrix - Soil  
Laboratory - ALS  
Batch File Number - ES1300953

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 per group)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
SOIL PREPARATION/ALS/EA055	Moisture Content (dried @ 103 °C)	15	15	14	✓	✓	0	0	0	0	0	0	0	0	1	1	1	0	2	2	0	0	0	0	✓	-
SEMI/VOLATILES ANALYSIS/ALS/EP066	Total Polychlorinated biphenyls	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	0	1	1	1	1	✓	✓
METALS ANALYSIS/ALS/EG005T	Arsenic	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	Barium	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	-
	Beryllium	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	-
	Cadmium	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	Chromium	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	Cobalt	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	-
	Copper	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	Lead	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	Manganese	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	-
	Nickel	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
	Vanadium	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	0	0	1	1	✓	-
	Zinc	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-
METALS ANALYSIS/ALS/EG035T	Mercury	15	15	14	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	2	2	1	1	1	1	✓	-

NOTES:  
(a) ✓ - holding times are within project guideline limits.  
✖ - holding times exceed project guideline limits.  
(b) ✓ - Limits of reporting (LORs) comply with project specifications.  
✖ - LORs do not comply with project specifications.

NA - Not Applicable

Matrix: Soil  
Laboratory: ALS/EnviroLab  
Lab Batch Nos: ES13000953  
Sample Dates: 11/01/2013

Field Duplicates (SOIL)

Pass RPD <= 30%  
Pass-1 RPD > 30%, Analysis result < 10 times LOR  
Pass-2 RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

SDG	ES1300953	ES1300953		
Sample ID	EXED08_11/1/13	QC01	RPD	Category1
Sample Type	Primary	Duplicate		
Sampled Date	11/01/2013	11/01/2013		

Chem_Group	ChemName	Units	LOR				
BTEX Compounds	Toluene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0	Pass
	m&p-Xylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	o-Xylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Total Xylenes	mg/kg	0.5	<0.5	<0.5	0	Pass
	Total BTEX	mg/kg	0.2	<0.2	<0.2	0	Pass
Inorganics	Moisture Content	%	1	16.2	17	5	Pass
Lead	Lead	mg/kg	5	42	39	7	Pass
Metals	Arsenic	mg/kg	5	6	6	0	Pass
	Cadmium	mg/kg	1	<1	<1	0	Pass
	Chromium	mg/kg	2	22	38	53	Fail
	Copper	mg/kg	5	26	27	4	Pass
	Mercury	mg/kg	0.1	<0.1	<0.1	0	Pass
	Nickel	mg/kg	2	8	11	32	Pass 1
	Barium	mg/kg	10	50	70	33	Pass 2
	Beryllium	mg/kg	1	<1	<1	0	Pass
	Chromium (hexavalent)	mg/kg	0.5	<0.5	<0.5	0	Pass
	Cobalt	mg/kg	2	2	3	40	Pass 1
	Manganese	mg/kg	5	104	79	27	Pass
	Vanadium	mg/kg	5	46	66	36	Pass 2
	Zinc	mg/kg	5	190	130	38	Fail
Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.2	<0.2	<0.2	0	Pass
Organochlorine Pesticides (OC)	Aldrin	mg/kg	0.05	<0.05	<0.05	0	Pass
	Dieldrin	mg/kg	0.05	<0.05	<0.05	0	Pass
	a-BHC	mg/kg	0.05	<0.05	<0.05	0	Pass
	b-BHC	mg/kg	0.05	<0.05	<0.05	0	Pass
	d-BHC	mg/kg	0.05	<0.05	<0.05	0	Pass
	g-BHC (Lindane)	mg/kg	0.05	<0.05	<0.05	0	Pass
	cis-Chlordane	mg/kg	0.05	<0.05	<0.05	0	Pass
	trans-Chlordane	mg/kg	0.05	<0.05	<0.05	0	Pass
	DDD	mg/kg	0.05	<0.05	<0.05	0	Pass
	DDE	mg/kg	0.05	<0.05	<0.05	0	Pass
	DDT	mg/kg	0.2	<0.2	<0.2	0	Pass
	Endosulfan 1	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endosulfan 2	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endosulfan sulfate	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endrin	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0	Pass
	Heptachlor	mg/kg	0.05	<0.05	<0.05	0	Pass
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0	Pass
	Hexachlorobenzene (HCB)	mg/kg	0.05	<0.05	<0.05	0	Pass
	Methoxychlor	mg/kg	0.2	<0.2	<0.2	0	Pass
Phenolic Compounds	Phenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2-Methylphenol (o-Cresol)	mg/kg	0.5	<0.5	<0.5	0	Pass
	3-&4-Methylphenol (m&p-Cresol)	mg/kg	1	<1	<1	0	Pass
	2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	4-Chloro-3-methylphenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4,6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4,5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	Pentachlorophenol	mg/kg	2	<2	<2	0	Pass

			SDG Sample ID Sample Type Sample Date	ES1300953 EXED08_11/1/13 Primary 11/01/2013	ES1300953 QC01 Duplicate 11/01/2013	RPD	Category1
Polychlorinated Biphenyls	Polychlorinated Biphenyls	mg/kg	0.1	<0.1	<0.1	0	Pass
Polynuclear Aromatic Hydrocarbons	Naphthalene	mg/kg	1	<1	<1	0	Pass
	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(b)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5	<0.5	<0.5	0	Pass
Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	10	<10	<10	0	Pass
	C10-C14 fraction	mg/kg	50	<50	<50	0	Pass
	C15-C28 fraction	mg/kg	100	<100	<100	0	Pass
	C29-C36 fraction	mg/kg	100	<100	<100	0	Pass
	C10-C36 fraction (sum)	mg/kg	50	<50	<50	0	Pass
Total Recoverable Hydrocarbons	C6-C10 fraction (F1 minus BTEX)	mg/kg	10	<10	<10	0	Pass
	C6-C10 fraction	mg/kg	10	<10	<10	0	Pass
	>C10-C16 fraction	mg/kg	50	<50	<50	0	Pass
	>C16-C34 fraction	mg/kg	100	<100	<100	0	Pass
	>C34-C40 fraction	mg/kg	100	<100	<100	0	Pass
	>C10-C40 fraction (sum)	mg/kg	50	<50	<50	0	Pass

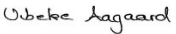

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Location	EX02	EX06	EX07	EXB0101	EXB0102	EXB0103	EXE001	EXE002	EXE003	EXE004	EXE005	EXE006
Sample ID	EX01_11/1/13_02	EX01_110113_06	EX01_110113_07	EXB0101_11/1/13	EXB0102_11/1/13	EXB0103_11/1/13	EXED01_11/1/13	EXED02_11/1/13	EXED03_11/1/13	EXED04_11/1/13	EXED05_11/1/13	EXED06_11/1/13
Sample Date	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013	11/01/2013
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Batch	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953	ES1300953

Chem Group	ChemName	output unit	EQL	Class 1	Class 2A	Class 2B
Total Petroleum Hydrocarbons	Sum of PAHs	mg/kg	0.5		40	100
	C6-C9 fraction	mg/kg	10			
	C10-C14 fraction	mg/kg	50			
	C15-C28 fraction	mg/kg	100			
	C29-C36 fraction	mg/kg	100			
	C10-C36 fraction (sum)	mg/kg	50			
	C6-C10 fraction (F1 minus BTEX)	mg/kg	10			
Total Recoverable Hydrocarbons	C6-C10 fraction	mg/kg	10			
	>C10-C16 fraction	mg/kg	50			
	>C10-C16 (less Naphthalene)	mg/kg	50			
	>C16-C34 fraction	mg/kg	50			
	>C34-C40 fraction	mg/kg	100			
	>C10-C40 fraction (sum)	mg/kg	50			
	Moisture Content	%	1			
Inorganics						

# DATA VALIDATION REPORT\_June 2013

**URS Project number:** 42213719 **Data verified by:** Bek Aagaard **Date:** 7/8/2013  
**Client:** Darwin Waterfront Corporation  
**Site:** Waterfront Precinct **Signed:**   
**URS Project Manager:** Jacques van Rensburg **Validation by:** Tim Smith **Date:** 12/8 /2013  
**Matrix type:** Soil **Signed:**   
**No Primary samples:** 3 **Project Manager:** Jacques van Rensburg  
**Laboratory:** ALS Labmark  
**Lab reference:** EB1313591 92129

## Data quality objectives

**Field data comparison** No apparent anomalies were observed between laboratory results and field observations.  
**Frequency of field QC** Field QC samples were collected to project specifications. Ten primary samples were collected in total and of these three primary samples were analysed. Field duplicate samples were collected at a rate of 1:10 and field triplicate samples at a rate of 1:20.  
**Frequency of laboratory QC** The laboratory reported a sufficient frequency of QC to assess whether the results have been reported to an acceptable accuracy and precision, with the exception of the following:
 

- The inter-laboratory duplicate was not analysed for endrin ketone, total polychlorinated biphenyls and phenolic compounds other than phenol. The precision of this data can be assessed as acceptable based on the presence of intra-laboratory field duplicates and laboratory duplicates for endrin ketone, total polychlorinated biphenyls and phenolic compounds other than phenol.

**Tests requested/reported** Samples were analysed and reported as requested on the COC.  
**Limits of reporting** LORs were sufficiently low to enable assessment against adopted guideline criteria.  
**Data transcription** A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by URS.

## Sample management

**Chain of Custody** Chain of custody documents completed.  
**Handling and preservation** Samples were transported with ice bricks and were received at 1.1°C in batch EB1313591.

## Data precision

**Field duplicate RPDs** RPDs for field duplicates were within control limits.  
**Field triplicate RPDs** RPDs exceeded control limits for the following sample analysis. (Samples with higher reported concentrations are in bold).
 

- SP06\_1\_040613 and DUP\_02\_040613 for Moisture Content (35%); and
- SP06\_1\_040613 and DUP\_02\_040613 for Lead (35%).

Elevated RPDs are common in soil samples and this apparent lack of precision is likely due to heterogeneity of the distribution of metals and the moisture content of constituent matrices of sub samples in soils at the site. However, care should be taken when interpreting results for lead, where close to guidelines.

As results for lead was less than 6 times the guideline, the elevated RPDs are not considered to affect the interpretation of the results for lead.

**Laboratory duplicate RPDs** The following laboratory duplicate RPD exceeded LOR based limits:

Batch	Analyte	Data	LCL (%)	UCL (%)	Comment
EB1313591	Lead	76.2%	0	20	RPD greater than upper control limit by 56%
EB1313591	Manganese	28.8%	0	50	RPD less than lower control limit by 11%

Over and under reporting of laboratory duplicate RPDs are common in soil samples, and this apparent lack of precision is likely due to heterogeneity of the distribution of metals in soils at the site. However, care should be taken when interpreting results for lead and manganese, where close to guidelines.



As results for lead was less than 6 times the guideline and manganese less than 2.5 to 5 times the guideline, the elevated RPDs are not considered to affect the interpretation of the results for lead and manganese.

#### Data accuracy

##### Laboratory control spike recovery

The following recoveries were outside control limits and may affect data interpretation:

Batch	Analyte	Recovery (%)	LCL (%)	UCL (%)	Comment
EB1313591	2-Methylphenol	125	67	124	Recovery greater than the upper control limit
EB1313591	2,6-Dichlorophenol	131	63	124	Recovery greater than the upper control limit
EB1313591	Acenaphthylene	138	67	118	Recovery greater than the upper control limit
EB1313591	Acenaphthene	127	83	121	Recovery greater than the upper control limit
EB1313591	Fluorene	118	76	116	Recovery greater than the upper control limit
EB1313591	Anthracene	143	70	115	Recovery greater than the upper control limit
EB1313591	Fluoranthene	128	69	116	Recovery greater than the upper control limit
EB1313591	Benzo(a,h)anthracene	145	61	120	Recovery greater than the upper control limit
EB1313591	Chrysene	125	62	119	Recovery greater than the upper control limit
EB1313591	Benzo(b)fluoranthene	152	49	129	Recovery greater than the upper control limit

LCS recoveries for 2-Methylphenol, 2,6-Dichlorophenol, Acenaphthylene, Acenaphthene, Fluorene, Anthracene, Fluoranthene, Benzo(a,h)anthracene, Chrysene and Benzo(b)fluoranthene were greater than the upper control limit by 1%, 7%, 20%, 6%, 2%, 28%, 12%, 25%, 6% and 23%, respectively. Therefore, the potential exists for concentrations of these analytes to be biased high by up to 25%, 31%, 38%, 27%, 18%, 43%, 28%, 45%, 25% and 52%, respectively. As there are no applicable guidelines for these analytes, this is not considered to have an impact on validity of conclusions.

##### Matrix spike recovery

Matrix spike recoveries were within control limits.

##### Surrogate spike recovery

The surrogate spike recoveries were within control limits.

#### Blank monitoring

##### Rinsate blank

Concentrations were not detected above the LOR for all analytes tested.

##### Field blank

Concentrations were not detected above the LOR for all analytes tested.

##### Trip blank

Concentrations were not detected above the LOR for all analytes tested.

##### Method blank

Concentrations of all analytes were reported below the LOR.

#### Chromatograms

N/A

#### Other observations

##### Batch EB1313591

- ED093T (Major Cations by ICPAES-Total)/EG005T (Total Metals by ICPAES): Sample SP06\_01\_040613 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- PAH/Phenols: High failing LCS deemed acceptable as all associated analyte results are less than LOR.



Site Name - Waterfront Stage 2A  
Project No. - 42213719  
Project Manager - Jacques van Rensburg  
Matrix - Soil  
Laboratory - ALS / Labmark  
Batch File Number - EB1313591 / 92129

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
SOIL PREPARATION/ALS/EA055	Moisture Content (dried @ 103 °C)	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	-
SEMIVOLATILES ANALYSIS/ALS/EP068A	4,4'-DDD	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	4,4'-DDE	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	4,4'-DDT	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	Aldrin	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	alpha-BHC	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	alpha-Endosulfan	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	beta-BHC	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	beta-Endosulfan	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	cis-Chlordane	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	delta-BHC	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	Dieldrin	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	Endosulfan sulfate	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	Endrin	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	Endrin aldehyde	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	Endrin ketone	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	gamma-BHC	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	Heptachlor	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	Heptachlor epoxide	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	Hexachlorobenzene (HCB)	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	Methoxychlor	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
trans-Chlordane	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓	
METALS/ALS/EG005T	Arsenic	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Barium	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Beryllium	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Cadmium	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Chromium	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Cobalt	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Copper	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Lead	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Manganese	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Nickel	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Vanadium	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
	Zinc	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
SEMIVOLATILES ANALYSIS/ALS/EP066	Total Polychlorinated biphenyls	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	0	1	1	1	1	1	✓	-
SEMIVOLATILES ANALYSIS/ALS/EP080/071	>C10 - C16 Fraction	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	-
	>C16 - C34 Fraction	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	1	0	1	✓	-
	>C34 - C40 Fraction	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	-
	C10 - C14 Fraction	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	-
	C15 - C28 Fraction	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	1	1	1	1	✓	-
	C29 - C36 Fraction	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	2	0	0	0	0	✓	-
VOLATILES ANALYSIS/ALS/EP080	Benzene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	Ethylbenzene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	meta- & para-Xylene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	Naphthalene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
	ortho-Xylene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	0	0	0	0	✓	✓
VOLATILES ANALYSIS/ALS/EP080/071	Toluene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	C6 - C10 Fraction	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	C6 - C10 Fraction minus BTEX (F1)	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
	C6 - C9 Fraction	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	✓	✓
SEMIVOLATILES ANALYSIS/ALS/EP075(SIM)B	Acenaphthene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	✓
	Acenaphthylene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Anthracene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Benzo(a)anthracene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Benzo(a)pyrene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Benzo(b)fluoranthene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Benzo(g,h,i)perylene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Benzo(k)fluoranthene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Chrysene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Dibenz(a,h)anthracene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Fluoranthene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Fluorene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Indeno(1,2,3-cd)pyrene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Naphthalene	5	5	4	✓	✓	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Phenanthrene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	✓	✓
	Pyrene	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	✓

Site Name - Waterfront Stage 2A  
Project No. - 42213719  
Project Manager - Jacques van Rensburg  
Matrix - Soil  
Laboratory - ALS / Labmark  
Batch File Number - EB1313591 / 92129

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
SEMIVOLATILES ANALYSIS/ALS/EP075(SIM)A	2,4,5-Trichlorophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	2,4,6-Trichlorophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	2,4-Dichlorophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	2,4-Dimethylphenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	2,6-Dichlorophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	2-Chlorophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	✓	✓
	2-Methylphenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	2-Nitrophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	✓	✓
	3- & 4-Methylphenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	0	0	0	✓	✓
	4-Chloro-3-Methylphenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	✓	✓
	Pentachlorophenol	4	4	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	✓	✓
	Phenol	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
NUTRIENTS/ALS/EG048	Hexavalent Chromium	5	5	4	✓	✓	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-
METALS/ALS/EG035T	Mercury	5	5	3	✓	✓	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	✓	-

NOTES:  
(a) ✓ - holding times are within project guideline limits.  
✗ - holding times exceed project guideline limits.  
(b) ✓ - Limits of reporting (LORs) comply with project specifications.  
✗ - LORs do not comply with project specifications.

Matrix: Soil  
Laboratory: ALS/EnviroLab  
Lab Batch Nos: ES1313591 / 92129  
Sample Dates: 4/06/2013

Field Duplicates (SOIL)

Pass RPD <= 30%  
Pass-1 RPD > 30%, Analysis result < 10 times LOR  
Pass-2 RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

SDG	EB1313591	EB1313591		
Sample ID	SP06_01_040613	DUP_01_040613	RPD	Category1
Sample Type	Normal	Duplicate		
Sampled Date	4/06/2013	4/06/2013		

Chem_Group	ChemName	Units	LOR				
BTEX Compounds	Toluene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0	Pass
	m&p-Xylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	o-Xylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Total Xylenes	mg/kg	0.5	<0.5	<0.5	0	Pass
	Total BTEX	mg/kg	0.2	<0.2	<0.2	0	Pass
Inorganics	Moisture Content	%	1	15.6	14.1	10	Pass
Lead	Lead	mg/kg	5	62	73	16	Pass
Metals	Arsenic	mg/kg	5	<5	5	0	Pass
	Cadmium	mg/kg	1	<1	<1	0	Pass
	Chromium	mg/kg	2	40	30	29	Pass
	Copper	mg/kg	5	33	34	3	Pass
	Mercury	mg/kg	0.1	<0.1	<0.1	0	Pass
	Nickel	mg/kg	2	5	5	0	Pass
	Barium	mg/kg	10	90	90	0	Pass
	Beryllium	mg/kg	1	<1	<1	0	Pass
	Chromium (hexavalent)	mg/kg	0.5	<0.5	<0.5	0	Pass
	Cobalt	mg/kg	2	2	2	0	Pass
	Manganese	mg/kg	5	124	94	28	Pass
	Vanadium	mg/kg	5	60	63	5	Pass
	Zinc	mg/kg	5	120	131	9	Pass
Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.2	<0.2	<0.2	0	Pass
Naphthalene	Naphthalene (VOC)	mg/kg	1	<1	<1	0	Pass
Organochlorine Pesticides (OC)	Aldrin	mg/kg	0.05	<0.05	<0.05	0	Pass
	Dieldrin	mg/kg	0.05	<0.05	<0.05	0	Pass
	a-BHC	mg/kg	0.05	<0.05	<0.05	0	Pass
	b-BHC	mg/kg	0.05	<0.05	<0.05	0	Pass
	d-BHC	mg/kg	0.05	<0.05	<0.05	0	Pass
	g-BHC (Lindane)	mg/kg	0.05	<0.05	<0.05	0	Pass
	cis-Chlordane	mg/kg	0.05	<0.05	<0.05	0	Pass
	trans-Chlordane	mg/kg	0.05	<0.05	<0.05	0	Pass
	DDD	mg/kg	0.05	<0.05	<0.05	0	Pass
	DDE	mg/kg	0.05	<0.05	<0.05	0	Pass
	DDT	mg/kg	0.2	<0.2	<0.2	0	Pass
	Endosulfan 1	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endosulfan 2	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endosulfan sulfate	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endrin	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	0	Pass
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0	Pass
	Heptachlor	mg/kg	0.05	<0.05	<0.05	0	Pass
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0	Pass
	Hexachlorobenzene (HCB)	mg/kg	0.05	<0.05	<0.05	0	Pass
	Methoxychlor	mg/kg	0.2	<0.2	<0.2	0	Pass
Phenolic Compounds	Phenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2-Methylphenol (o-Cresol)	mg/kg	0.5	<0.5	<0.5	0	Pass
	3-&4-Methylphenol (m&p-Cresol)	mg/kg	1	<1	<1	0	Pass
	2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	4-Chloro-3-methylphenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4,6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	2,4,5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	0	Pass
	Pentachlorophenol	mg/kg	2	<2	<2	0	Pass
Polychlorinated Biphenyls	Polychlorinated Biphenyls	mg/kg	0.1	<0.1	<0.1	0	Pass

			SDG	EB1313591	EB1313591	RPD	Category1
			Sample ID	SP06_01_040613	DUP_01_040613		
			Sample Type	Normal	Duplicate		
			Sampled Date	4/06/2013	4/06/2013		
Polynuclear Aromatic Hydrocarbons	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Anthracene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Fluorene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(b)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(a)pyrene TEQ	mg/kg	0.5	<0.5	<0.5	0	Pass
	Chrysene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Pyrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Sum of PAHs	mg/kg	0.5	<0.5	<0.5	0	Pass
Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	10	<10	<10	0	Pass
	C10-C14 fraction	mg/kg	50	<50	<50	0	Pass
	C15-C28 fraction	mg/kg	100	<100	<100	0	Pass
	C29-C36 fraction	mg/kg	100	<100	<100	0	Pass
	C10-C36 fraction (sum)	mg/kg	50	<50	<50	0	Pass
Total Recoverable Hydrocarbons							
	C6-C10 fraction (F1 minus BTEX)	mg/kg	10	<10	<10	0	Pass
	C6-C10 fraction	mg/kg	10	<10	<10	0	Pass
	>C10-C16 fraction	mg/kg	50	<50	<50	0	Pass
	>C16-C34 fraction	mg/kg	100	<100	<100	0	Pass
	>C34-C40 fraction	mg/kg	100	<100	<100	0	Pass
	>C10-C40 fraction (sum)	mg/kg	50	<50	<50	0	Pass

Site: Waterfront Precinct  
 Project No.: 42213719  
 Project Manager: Tim Smith  
 Matrix: Soil  
 Laboratory: ALS/EnviroLab  
 Lab Batch Nos: ES1313591 / 92129  
 Sample Dates: 4/06/2013

Pass RPD <= 30%  
 Pass-1 RPD > 30%, Analysis result < 10 times LOR  
 Pass-2 RPD <= 50%, Analysis result > 10 times LOR and < 20 times

Field Triplicates (SOIL)

SDG	EB1313591	Interlab_D		
Sample ID	SP06_01_040613	DUP_02_040613		
Sample Type	Normal	Triplicate		
Sampled Date	4/06/2013	4/06/2013		

Chem_Group	ChemName	Units	LOR				
BTX Compounds	Toluene	mg/kg	0.5	<0.5	<0.5	0	Pass
	Ethylbenzene	mg/kg	1	<0.5	<1	0	Pass
	m&p-Xylene	mg/kg	2	<0.5	<2	0	Pass
	o-Xylene	mg/kg	1	<0.5	<1	0	Pass
	Total Xylenes	mg/kg	0.5	<0.5	-	-	-
	Total BTX	mg/kg	0.2	<0.2	-	-	-
Inorganics	Moisture Content	%	0.1	15.6	11	35	Fail
Lead	Lead	mg/kg	1	62	88	35	Fail
Metals	Arsenic	mg/kg	4	<5	7	33	Pass 1
	Cadmium	mg/kg	0.4	<1	0.8	22	Pass
	Chromium	mg/kg	1	40	38	5	Pass
	Copper	mg/kg	1	33	38	14	Pass
	Mercury	mg/kg	0.1	<0.1	<0.1	0	Pass
	Nickel	mg/kg	1	5	8	46	Pass 1
	Barium	mg/kg	1	90	67	29	Pass
	Beryllium	mg/kg	1	<1	<1	0	Pass
	Chromium (hexavalent)	mg/kg	1	<0.5	<1	0	Pass
	Cobalt	mg/kg	1	2	3	40	Pass 1
	Manganese	mg/kg	1	124	120	3	Pass
	Vanadium	mg/kg	1	60	60	0	Pass
	Zinc	mg/kg	1	120	150	22	Pass
Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.2	<0.2	<0.2	0	Pass
Naphthalene	Naphthalene (VOC)	mg/kg	1	<1	-	-	-
Organochlorine Pesticides (OC)	Aldrin	mg/kg	0.1	<0.05	<0.1	0	Pass
	Dieldrin	mg/kg	0.1	<0.05	<0.1	0	Pass
	a-BHC	mg/kg	0.1	<0.05	<0.1	0	Pass
	b-BHC	mg/kg	0.1	<0.05	<0.1	0	Pass
	d-BHC	mg/kg	0.1	<0.05	<0.1	0	Pass
	g-BHC (Lindane)	mg/kg	0.1	<0.05	<0.1	0	Pass
	cis-Chlordane	mg/kg	0.1	<0.05	<0.1	0	Pass
	trans-Chlordane	mg/kg	0.1	<0.05	<0.1	0	Pass
	DDD	mg/kg	0.1	<0.05	<0.1	0	Pass
	DDE	mg/kg	0.1	<0.05	<0.1	0	Pass
	DDT	mg/kg	0.1	<0.2	<0.1	0	Pass
	Endosulfan 1	mg/kg	0.1	<0.05	<0.1	0	Pass
	Endosulfan 2	mg/kg	0.1	<0.05	<0.1	0	Pass
	Endosulfan sulfate	mg/kg	0.1	<0.05	<0.1	0	Pass
	Endrin	mg/kg	0.1	<0.05	<0.1	0	Pass
	Endrin aldehyde	mg/kg	0.1	<0.05	<0.1	0	Pass
	Endrin ketone	mg/kg	0.05	<0.05	-	-	-
	Heptachlor	mg/kg	0.1	<0.05	<0.1	0	Pass
	Heptachlor epoxide	mg/kg	0.1	<0.05	<0.1	0	Pass
	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.05	<0.1	0	Pass
	Methoxychlor	mg/kg	0.1	<0.2	<0.1	0	Pass
Phenolic Compounds	Phenol	mg/kg	0.5	<0.5	-	-	-
	2-Chlorophenol	mg/kg	0.5	<0.5	-	-	-
	2-Methylphenol (o-Cresol)	mg/kg	0.5	<0.5	-	-	-
	3-&4-Methylphenol (m&p-Cresol)	mg/kg	1	<1	-	-	-
	2-Nitrophenol	mg/kg	0.5	<0.5	-	-	-
	2,4-Dichlorophenol	mg/kg	0.5	<0.5	-	-	-
	2,4-Dimethylphenol	mg/kg	0.5	<0.5	-	-	-
	2,6-Dichlorophenol	mg/kg	0.5	<0.5	-	-	-
	4-Chloro-3-methylphenol	mg/kg	0.5	<0.5	-	-	-
	2,4,6-Trichlorophenol	mg/kg	0.5	<0.5	-	-	-
	2,4,5-Trichlorophenol	mg/kg	0.5	<0.5	-	-	-
	Pentachlorophenol	mg/kg	2	<2	-	-	-
Polychlorinated Biphenyls	Polychlorinated Biphenyls	mg/kg	0.1	<0.1	-	-	-

<b>SDG</b>	EB1313591	Interlab_D		
<b>Sample ID</b>	SP06_01_040613	DUP_02_040613	<b>RPD</b>	<b>Category1</b>
<b>Sample Type</b>	Normal	Triplicate		
<b>Sampled Date</b>	4/06/2013	4/06/2013		

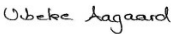

Polynuclear Aromatic Hydrocarbons	Naphthalene	mg/kg	1	<0.5	<0.1	0	Pass
	Acenaphthylene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Acenaphthene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Anthracene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Fluorene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Phenanthrene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Fluoranthene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Benzo(a)anthracene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Benzo(b)fluoranthene	mg/kg	0.5	<0.5	-	-	-
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	-	-	-
	Benzo(a)pyrene	mg/kg	0.05	<0.5	<0.05	0	Pass
	Benzo(a)pyrene TEQ	mg/kg	0.5	<0.5	<0.5	0	Pass
	Chrysene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Pyrene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Benzo(g,h,i)perylene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Dibenz(a,h)anthracene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.5	<0.1	0	Pass
	Sum of PAHs	mg/kg	0.5	<0.5	-	-	-
Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	25	<10	<25	0	Pass
	C10-C14 fraction	mg/kg	50	<50	<50	0	Pass
	C15-C28 fraction	mg/kg	100	<100	<100	0	Pass
	C29-C36 fraction	mg/kg	100	<100	<100	0	Pass
	C10-C36 fraction (sum)	mg/kg	50	<50	-	-	-
Total Recoverable Hydrocarbons	C6-C10 fraction (F1 minus BTEX)	mg/kg	25	<10	<25	0	Pass
	C6-C10 fraction	mg/kg	25	<10	<25	0	Pass
	>C10-C16 fraction	mg/kg	50	<50	<50	0	Pass
	>C16-C34 fraction	mg/kg	100	<100	<100	0	Pass
	>C34-C40 fraction	mg/kg	100	<100	<100	0	Pass
	>C10-C40 fraction (sum)	mg/kg	50	<50	-	-	Pass

10% check, 7/8/2013, BA  
OK  
aw

Table ??  
Analytical Results -  
Waterfront Stage 2A - Waterfront Stage 2A  
Darwin Waterfront Corporation

Chem. Group	ChemName	Output Unit	LOR	NEPM1999 HIL F	NEPM1999 HIL E	NEPM1999 HIL F	SP06_01				SP06_04			
							Sample ID	SP06_01	DUP_01	DUP_02	SP06_04	SP06_04	SP06_09	SP06_09
BTEx Compounds	Toluene	mg/kg	0.5				4/06/2013	4/06/2013	4/06/2013	4/06/2013	4/06/2013	4/06/2013	4/06/2013	4/06/2013
	Ethylbenzene	mg/kg	0.5				Primary	Duplicate	Triplicate	Primary	Primary	Primary	Primary	Primary
	m,p-Xylene	mg/kg	0.5				EB1313591	EB1313591	EB1313591	EB1313591	EB1313591	EB1313591	EB1313591	EB1313591
	o-Xylene	mg/kg	0.5											
	Total Xylenes	mg/kg	0.5											
	Total BTEx	mg/kg	0.2											
	Lead	mg/kg	5	600	600	600	1500	62	73	88	63	38	38	38
	Arsenic	mg/kg	5	20	200	200	500	5	5	7	5	5	5	5
	Barium	mg/kg	10	300				90	90	67	80	80	100	100
	Beryllium	mg/kg	1	3	40	40	100	<1	<1	<1	<1	<1	<1	<1
Metals	Cadmium	mg/kg	1	3	40	40	100	<1	<1	0.8	<1	<1	<1	<1
	Chromium	mg/kg	2					40	<1	38	32	30	30	30
	Chromium (hexavalent)	mg/kg	0.5	1	200	200	500	<0.5	<1	<1	<0.5	<0.5	<0.5	<0.5
	Cobalt	mg/kg	2					2	2	3	3	3	3	3
	Copper	mg/kg	5	100	2000	2000	5000	33	34	38	38	39	30	30
	Manganese	mg/kg	5	500	3000	3000	7500	124	94	120	120	121	277	277
	Mercury	mg/kg	0.1	1	30	30	75	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel	mg/kg	2	60	600	600	3000	5	5	8	6	5	5	5
	Vanadium	mg/kg	5	50				135	131	150	129	86	86	86
	Zinc	mg/kg	5	200	14000			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.2					<1	<1	-	<1	<1	<1	<1
Naphthalene	Naphthalene (VOC)	mg/kg	1											
Organochlorine Pesticides (OC)	Aldrin	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	DDT	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Endosulfan 1	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Endosulfan 2	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Endosulfan sulfate	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Endrin	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Endrin aldehyde	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Endrin ketone	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Heptachlor	mg/kg	0.05				50	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Heptachlor epoxide	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
Phenolic Compounds	Hexachlorobenzene (HCB)	mg/kg	0.05					<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
	Methoxychlor	mg/kg	0.2				42500	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2
	Phenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	2-Chlorophenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	2-Methylphenol (o-Cresol)	mg/kg	0.5					<1	<1	-	<1	<1	<1	<1
	3,4-Dimethylphenol (m,p-Cresol)	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	2,4-Dichlorophenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	2,4-Dimethylphenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	2,6-Dichlorophenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	4-Chloro-3-methylphenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
Polychlorinated Biphenyls	2,4,5-Trichlorophenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	2,4,5-Trichlorophenol	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	Pentachlorophenol	mg/kg	2					<2	<2	-	<2	<2	<2	<2
	Sum of Phenols	mg/kg	5					-	-	<5	-	-	-	-
	Polychlorinated Biphenyls	mg/kg	0.1				50	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2
	Aroclor 1016	mg/kg	0.1					-	-	<0.1	-	-	-	-
	Aroclor 1221	mg/kg	0.1					-	-	<0.1	-	-	-	-
	Aroclor 1232	mg/kg	0.1					-	-	<0.1	-	-	-	-
	Aroclor 1242	mg/kg	0.1					-	-	<0.1	-	-	-	-
	Aroclor 1254	mg/kg	0.1					-	-	<0.1	-	-	-	-
Polynuclear Aromatic Hydrocarbons	Aroclor 1260	mg/kg	0.1					-	-	<0.1	-	-	-	-
	Naphthalene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Acenaphthylene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Acenaphthene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Anthracene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Fluorene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Phenanthrene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Fluoranthene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Benz(a)anthracene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Benz(b)fluoranthene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
Total Petroleum Hydrocarbons	Benz(k)fluoranthene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	Benz(a,b)fluoranthene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	Benz(a)pyrene	mg/kg	0.2				5	-	-	<0.2	-	-	-	-
	Benz(b)pyrene	mg/kg	0.5					<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5
	Benz(a)pyrene TEQ	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Chrysene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Pyrene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Benz(g,h,i)perylene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Dibenz(a,h)anthracene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5					<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons	Sum of PAHs	mg/kg	0.5				100	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	C8-C9 fraction	mg/kg	10					<10	<10	<25	<10	<10	<10	<10
	C10-C14 fraction	mg/kg	90					<90	<90	<50	<50	<50	<50	<50
	C15-C28 fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100
	C29-C36 fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100
	C10-C36 fraction (sum)	mg/kg	90					<90	<90	<50	<50	<50	<50	<50
	C6-C10 fraction (F1 minus BTEx)	mg/kg	10					<10	<10	<25	<10	<10	<10	<10
	C6-C10 fraction	mg/kg	90					<90	<90	<50	<50	<50	<50	<50
	>C10-C16 fraction	mg/kg	50					<50	<50	<100	<100	<100	<100	<100
	>C16-C34 fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100
Inorganics	>C34-C40 fraction (sum)	mg/kg	50					<50	<50	<100	<100	<100	<100	<100
	Moisture Content	%	1					15.6	14.1	11	23.3	23.3	12.8	12.8

# DATA VALIDATION REPORT\_August 2013

<b>URS Project number:</b>	42213719	<b>Data verified by:</b>	Bek Aagaard	<b>Date:</b>	30/8/2013
<b>Client:</b>	Darwin Waterfront Corporation				
<b>Site:</b>	Waterfront Precinct	<b>Signed:</b>			
<b>URS Project Manager:</b>	Jacques van Rensburg	<b>Validation by:</b>	Tim Smith	<b>Date:</b>	12/8 /2013
<b>Matrix type:</b>	Soil	<b>Signed:</b>			
<b>No Primary samples:</b>	6	<b>Project Manager:</b>	Jacques van Rensburg		
<b>Laboratory:</b>	ALS				
<b>Lab reference:</b>	ES1318728				

## Data quality objectives

Field data comparison	No apparent anomalies were observed between laboratory results and field observations.
Frequency of field QC	No field duplicates and triplicates were collected
Frequency of laboratory QC	The laboratory reported a sufficient frequency of QC to assess whether the results have been reported to an acceptable accuracy and precision.
Tests requested/reported	Samples were analysed and reported as requested on the COC.
Limits of reporting	LORs were sufficiently low to enable assessment against adopted guideline criteria.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by URS.

## Sample management

Chain of Custody	Chain of custody documents completed.
Handling and preservation	Samples were transported with ice bricks and were received at 0.6°C in batch ES131828.

## Data precision

Field duplicate RPDs	N/A
Field triplicate RPDs	N/A
Laboratory duplicate RPDs	Laboratory duplicate RPDs were all within control limits.

## Data accuracy

Laboratory control spike recovery	Laboratory control spike limits were all within control limits.
Matrix spike recovery	Matrix spike recoveries were within control limits.  Matrix spike recoveries were not reported for TPH/TRH and BTEXN analytes and for selected metals, PAHs, organochlorine pesticides and phenols. The accuracy of the data for these compound groups, where no matrix spike recoveries were reported, is considered acceptable based on the presence of other quality control data, such as method blanks, LCS recoveries and surrogate recoveries (where applicable).
Surrogate spike recovery	The surrogate spike recoveries were within control limits.

## Blank monitoring

Rinsate blank	Concentrations were not detected above the LOR for all analytes tested.
Field blank	Concentrations were not detected above the LOR for all analytes tested.
Trip blank	Concentrations were not detected above the LOR for all analytes tested.
Method blank	Concentrations of all analytes were reported below the LOR. The laboratory method blank was not reported for moisture content. As moisture content has not been selected as a constituent of concern, this is not considered to affect the interpretation of the results.

<b>Chromatograms</b>	N/A
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**Other observations**

**Batch ES1318728**

- EG020: Positive zinc result for sample ES1318728 #009 has been confirmed by re-analysis.

Site Name - Waterfront Stage 2A  
Project No. - 42213719  
Project Manager - Jacques van Rensburg  
Matrix - Soil  
Laboratory - ALS  
Batch File Number - ES1318728

Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
						Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
Arsenic	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Barium	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	-	-
Beryllium	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	-	-
Cadmium	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Chromium	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Cobalt	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	-	-
Copper	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Iron	3	3	3	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	0	1	1	-	-
Lead	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Manganese	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	0	1	1	-	-
Nickel	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Vanadium	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	-	-
Zinc	6	6	6	✓	✓	0	0	1	1	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
Moisture Content (dried @ 103 °C)	6	6	6	✓	✓	0	0	0	0	0	0	1	0	1	0	1	0	1	2	1	0	0	0	-	-
Acenaphthene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Acenaphthylene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Anthracene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Benz(a)anthracene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Benzo(a)pyrene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Benzo(a)pyrene TEQ (zero)	3	3	3	✓	✓	0	0	0	0	0	0	0	0	1	0	1	0	1	2	1	0	0	0	✓	✓
Benzo(b)fluoranthene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Benzo(g,h,i)perylene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Benzo(k)fluoranthene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Chrysene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Dibenz(a,h)anthracene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Fluoranthene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Fluorene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Indeno(1,2,3-cd)pyrene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Naphthalene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Phenanthrene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
Pyrene	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Hexavalent Chromium	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	-	-
4,4'-DDD	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
4,4'-DDE	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
4,4'-DDT	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
Aldrin	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
alpha-BHC	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
alpha-Endosulfan	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
beta-BHC	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
beta-Endosulfan	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
cis-Chlordane	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
delta-BHC	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
Dieldrin	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
Endosulfan sulfate	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
Endrin	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
Endrin aldehyde	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
Endrin ketone	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
gamma-BHC	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
Heptachlor	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
Heptachlor epoxide	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
Hexachlorobenzene (HCB)	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
Methoxychlor	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
trans-Chlordane	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
Total Polychlorinated biphenyls	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
Mercury	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
>C10 - C16 Fraction	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
>C16 - C34 Fraction	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
>C34 - C40 Fraction	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
C10 - C14 Fraction	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
C15 - C28 Fraction	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
C29 - C36 Fraction	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-

Site Name - Waterfront Stage 2A  
Project No. - 42213719  
Project Manager - Jacques van Rensburg  
Matrix - Soil  
Laboratory - ALS  
Batch File Number - ES1318728

Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
						Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
Benzene	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Ethylbenzene	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
meta- & para-Xylene	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Naphthalene	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	2	2	1	1	1	1	✓	✓
ortho-Xylene	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Toluene	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
C6 - C10 Fraction	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
C6 - C9 Fraction	3	3	3	✓	✓	1	1	1	1	1	1	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
2,4,5-Trichlorophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
2,4,6-Trichlorophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
2,4-Dichlorophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
2,4-Dimethylphenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
2,6-Dichlorophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
2-Chlorophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
2-Methylphenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
2-Nitrophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
3- & 4-Methylphenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
4-Chloro-3-Methylphenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Pentachlorophenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
Phenol	3	3	3	✓	✓	0	0	0	0	0	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓

NOTES:  
(a) ✓ - holding times are within project guideline limits.  
✗ - holding times exceed project guideline limits.  
(b) ✓ - Limits of reporting (LORs) comply with project specifications.  
✗ - LORs do not comply with project specifications.

10% check  
30/8/2013 BA

X

Location	HC01 220813	HC02 220813	HC03 220813	LEACH 01 220813	LEACH 02 220813	LEACH 03 220813
Sample ID	HC01 220813	HC02 220813	HC03 220813	LEACH 01 220813	LEACH 02 220813	LEACH 03 220813
Sample Date Time	22/08/2013	22/08/2013	22/08/2013	22/08/2013	22/08/2013	22/08/2013
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
Lab Report Number	ES1318728	ES1318728	ES1318728	ES1318728	ES1318728	ES1318728

Chem Group	ChemName	output unit	LOR	NSW 2008 General Solid Waste (No Leaching)	NSW 2008 General Solid Waste (with leaching)	HC01 220813	HC02 220813	HC03 220813	LEACH 01 220813	LEACH 02 220813	LEACH 03 220813
Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.2	10	18	<0.2	<0.2	<0.2	-	-	-
BTEX Compounds	Toluene	mg/kg	0.5	288	518	<0.5	<0.5	<0.5	-	-	-
	Ethylbenzene	mg/kg	0.5	600	1080	<0.5	<0.5	<0.5	-	-	-
	m,p-Xylene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	o-Xylene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Naphthalene (VOC)	mg/kg	1			<1	<1	<1	-	-	-
	Total Xylenes	mg/kg	0.5	1000	1800	<0.5	<0.5	<0.5	-	-	-
	Total BTEX	mg/kg	0.2			<0.2	<0.2	<0.2	-	-	-
Metals	Arsenic	mg/kg	5	100	500	6	<5	6	6	9	16
	Barium	mg/kg	10			80	100	140	-	-	-
	Beryllium	mg/kg	1	20	100	<1	<1	<1	-	-	-
	Cadmium	mg/kg	1	20	100	<1	<1	<1	<1	<1	<1
	Chromium	mg/kg	2			31	42	30	38	48	61
	Chromium (hexavalent)	mg/kg	0.5	100	1900	<0.5	<0.5	<0.5	-	-	-
	Cobalt	mg/kg	2			2	2	2	-	-	-
	Copper	mg/kg	5			28	36	44	17	19	22
	Iron	mg/kg	50			-	-	-	39800	42400	48600
	Lead	mg/kg	5	100	1500	50	27	63	36	48	199
	Manganese	mg/kg	5			130	140	171	69	70	65
	Mercury	mg/kg	0.1	4	50	<0.1	<0.1	<0.1	-	-	-
	Nickel	mg/kg	2	40	1050	9	8	8	8	6	5
	Vanadium	mg/kg	5			59	54	54	-	-	-
	Zinc	mg/kg	5			94	96	148	96	141	148
Organochlorine Pesticides (OC)	Aldrin	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Dieldrin	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	a-BHC	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	b-BHC	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	d-BHC	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	g-BHC (Lindane)	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	cis-Chlordane	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	trans-Chlordane	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	DDD	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	DDE	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	DDT	mg/kg	0.2			<0.2	<0.2	<0.2	-	-	-
	DDT+DDE+DDD	mg/kg	-			-	-	-	-	-	-
	Endosulfan 1	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Endosulfan 2	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Endosulfan sulfate	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Endrin	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Endrin aldehyde	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Endrin ketone	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Heptachlor	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Heptachlor epoxide	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Hexachlorobenzene (HCB)	mg/kg	0.05			<0.05	<0.05	<0.05	-	-	-
	Methoxychlor	mg/kg	0.2			<0.2	<0.2	<0.2	-	-	-
Phenolic Compounds	Phenol	mg/kg	0.5		518	<0.5	<0.5	<0.5	-	-	-
	2-Chlorophenol	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	2-Methylphenol (o-Cresol)	mg/kg	0.5	4000	7200	<0.5	<0.5	<0.5	-	-	-
	3,4-Methylphenol (m,p-Cresol)	mg/kg	1			<1	<1	<1	-	-	-
	2-Nitrophenol	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	2,4-Dichlorophenol	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	2,4-Dimethylphenol	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	2,6-Dichlorophenol	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	4-Chloro-3-methylphenol	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	2,4,6-Trichlorophenol	mg/kg	0.5	40	72	<0.5	<0.5	<0.5	-	-	-
	2,4,5-Trichlorophenol	mg/kg	0.5	8000	14400	<0.5	<0.5	<0.5	-	-	-
	Pentachlorophenol	mg/kg	2			<2	<2	<2	-	-	-
Polychlorinated Biphenyls	Polychlorinated Biphenyls	mg/kg	0.1		50	<0.1	<0.1	<0.1	-	-	-
Polynuclear Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Acenaphthylene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Anthracene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Benzo(a)anthracene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Benzo(a)pyrene	mg/kg	0.5	0.8	10	<0.5	<0.5	<0.5	-	-	-
	Benzo(a)pyrene TEQ (zero)	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Benzo(b)fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Benzo(g,h,i)perylene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Benzo(k)fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Chrysene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Dibenz(a,h)anthracene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Fluoranthene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Fluorene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Naphthalene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Phenanthrene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Pyrene	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
	Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5			<0.5	<0.5	<0.5	-	-	-
Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	10		650	<10	<10	<10	-	-	-
	C10-C14 fraction	mg/kg	50			<50	<50	<50	-	-	-
	C15-C28 fraction	mg/kg	100			<100	<100	<100	-	-	-
	C29-C36 fraction	mg/kg	100			<100	<100	<100	-	-	-
	C10-C36 fraction (sum)	mg/kg	50		10000	<50	<50	<50	-	-	-
Total Recoverable Hydrocarbons	C6-C10 fraction (Ft minus BTEX)	mg/kg	10			<10	<10	<10	-	-	-
	C6-C10 fraction	mg/kg	10			<10	<10	<10	-	-	-
	>C10-C16 fraction	mg/kg	50			<50	<50	<50	-	-	-
	>C16-C34 fraction	mg/kg	100			<100	<100	<100	-	-	-
	>C34-C40 fraction	mg/kg	100			<100	<100	<100	-	-	-
	>C10-C40 fraction (sum)	mg/kg	50			<50	<50	<50	-	-	-
Inorganics	Moisture Content	%	1			17.4	19.8	14.5	17.5	17.8	19.7