

24 October 2007

Tattersall Surveyors Pty Ltd
PO Box 54
RAYMOND TERRACE NSW 2324

Attention: Bob Lander

Dear Bob

RE: Myall Quays Detention Lake Sediment Sampling and Analysis

1 INTRODUCTION

1.1 General

This letter presents the results of sediment sampling and analysis carried out by Coffey Environments Pty Ltd (Coffey Environments) from Myall Quays, Tea Garden as shown in **Figure 1**.

The work was commissioned by Mr Bob Lander of Tattersall Surveyors Pty Ltd to measure the levels of potential contaminants present in the Myall Quays.

1.2 Objectives and Scope of Work

The objectives of this investigation were to assess the lake sediments with regards to the potential for the lake to become a 'pollutant sink' resulting in the build up of nutrients and persistent chemical pollutants.

The scope of work included:

- Fieldwork including sediment sampling at selected locations on the lake floor;
- Laboratory analysis of a selected number of samples for heavy metals (Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Sn, Zn, Hg), total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), Polynuclear aromatic hydrocarbons (PAH), organochlorine pesticides (OCP), polychlorinated biphenyls (PCB), total phosphorous, total oxidised nitrogen (NOx) and total kjeldahl nitrogen (TKN);
- Data assessment and reporting.

1.3 Regulatory Background and Applicable Guidelines

Sediments are important as both a source and as a sink of dissolved contaminants. As well as influencing surface water quality, sediments represent a source of bioavailable contaminants to benthic biota and hence potentially to the aquatic food chain.

For assessing contamination levels in the sediment the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), Chapter 3.5 Sediment Quality Guidelines (the guidelines) were used.¹ The recommended guideline values are tabulated as interim sediment quality guideline (ISQG) values and are presented in **Tables LR1-LR4**. The ISQG are presented in a range. The low range trigger values have been adopted as warning levels and the high range trigger values have been adopted as the investigation levels (ILs). Due to the trace level detection limits required for silver, chlordane, dieldrin, endrin and lindane the warning levels were below the reporting limits of the laboratories.

2 FIELD WORK

2.1 Field Investigations

Field work was carried out on 5 October 2007. Twenty one sediment samples were collected at locations shown in **Figure 2**. Sediment sampling was conducted using Coffey's shallow bottom boat manned by a Coffey Environmental Scientist and a technician. Sixteen sediment samples were collected using a core sampler and disposable gloves. Sediment samples were placed into glass jars with Teflon lined lids as supplied by the laboratory and given a unique sample identification number.

2.2 Field Quality Assurance/Quality Control

Environmental sampling activities were generally based on procedures and protocols outlined in Coffey's Environmental standard operating procedures which is based on industry accepted standard practice.

The sampling equipment was decontaminated between sample locations to avoid cross contamination. A clean pair of disposable gloves was used when handling each sample.

One duplicate sample, identified as D1 (duplicate of S1) was tested by the primary laboratory as part of this investigation to assess whether the field sampling procedures provided adequately reproducible results. One triplicate sample, identified as TRIP1 (triplicate of S1) was tested by the secondary laboratory as part of this investigation to assess whether the primary laboratory procedures provided adequately reproducible results.

In addition to field quality control, the laboratory conducted internal quality control using laboratory duplicates, spikes and method blanks. The results are shown with laboratory report sheets in Appendix B. Analytical methods used for the laboratory testing are also indicated on the laboratory report sheets.

2.3 Laboratory Testing

Primary and duplicate sediment samples were dispatched to SGS Australia Pty Ltd (SGS). SGS forwarded sub samples to the National Measurement Institute for ultra trace level OCP/PCB analysis and the triplicate sediment sample was dispatched to Australian Laboratory Services Environmental (ALSE), both of which are a NATA registered laboratory for the analysis undertaken, under chain of custody conditions.

Selected soil samples collected from near the lake inlets were subjected to laboratory analysis, while other samples were held in the laboratory for further analysis, if required.

The analytical suite was selected based on the analytes tabulated in Chapter 3 of the guidelines.

2.4 Contamination Assessment Results

2.4.1 Quality Assurance/Quality Control

Samples were received by SGS, NM1 and ALSE within the recommended holding times and they were chilled when received. Copies of the Chain of Custody documentation are included in **Appendix A**. The samples were extracted within the required holding time. The percentage recovery results of laboratory control sample were acceptable for the analyses requested. The laboratory blank results were below the practical quantitation limit (PQL) for the analyses requested.

A field duplicate (D1) was also submitted for analysis. The relative percentage difference (RPD) of the results between the primary sample (S1) and field duplicate can give an indication of the robustness of the sampling technique and heterogeneity of contamination. RPD are presented in **Tables LR1-LR4** for analytical results greater than 5 times the level of reporting. There were no RPDs <50% which indicates that the contamination is homogeneous and sampling techniques were robust. Triplicate sample, TRIP1, had a concentration of 0.2 mg/kg where as the primary and duplicate sample were below the laboratory reporting limit. Based on the primary and secondary results the triplicate result has been rejected from the data set and judged to be a QA/QC failure on the secondary laboratory's behalf.

The analytical laboratories also conducted internal QA/QC sample analysis including method blanks, laboratory control samples and duplicates. A review of the internal laboratories QA/QC data were within each laboratories acceptance criteria.

Based on the above information the primary laboratory data is judged to be representative and usable for this investigation.

2.4.2 Comparison of Results with Investigation Levels

A summary of the laboratory results is presented in **Tables LR1-LR4**. The laboratory results and chain of custody documentation is presented in **Appendix A**.

Comparison of the laboratory results to the sediment investigation levels (IL) revealed TPH, BTEX, OCP and PCB were not detected above the laboratory reporting limit and thus the adopted ILs.

Heavy metals were not detected above the warning levels in the primary and duplicate samples analysed.

There are no ILs established for total phosphorous or total nitrogen for this investigation. These results were compared to Sediment Properties of Urban Lakes and Ponds.² The total kjeldahl nitrogen concentrations were in the range of 36-690 mg/kg in the samples analysed. These are below typical range of 1,000-3,000 mg/kg. Total phosphorous concentrations were in the range 23-150 mg/kg in the samples analysed. These are below the typical range of 300-900mg/kg.

2.5 Summary and Conclusions

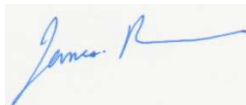
The sediment samples analysed from Myall Quay's Detention Lake show low heavy metals (Cr, Cu, Pb, Hg, Ni and Zn) concentrations which are below the adopted warning levels and may possibly be at background levels.

OCP and PCB were not detected above the laboratory reporting limits. PAH were detected in sample D1 (duplicate of S1) at concentrations below the warning levels for this investigation.

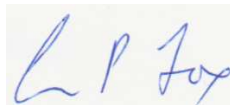
Nutrient concentrations (total nitrogen and total phosphorous) indicate they have not accumulated to levels typical of urban ponds and lakes.

Based on the above investigation it appears that the Myall Quays Detention Lake is not a “pollutant sink” to date. This report has established baseline comparison data for future development and monitoring of the sediments of the detention lake.

For and on behalf of Coffey Environments Pty Ltd



James McMahon
Group Leader Newcastle



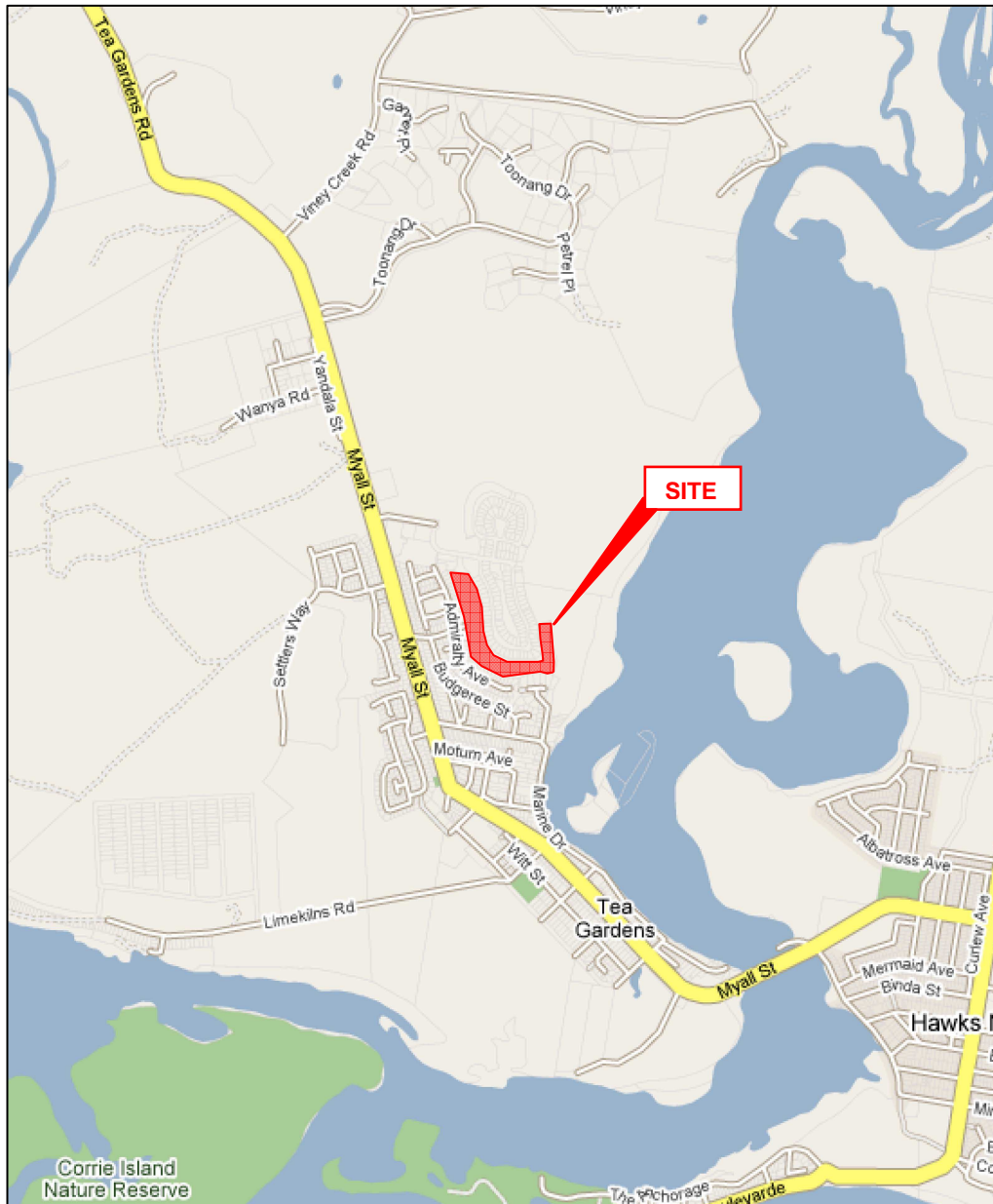
Laurie Fox
Associate


Attachments: Import Information Regarding Your Coffey Environments Report

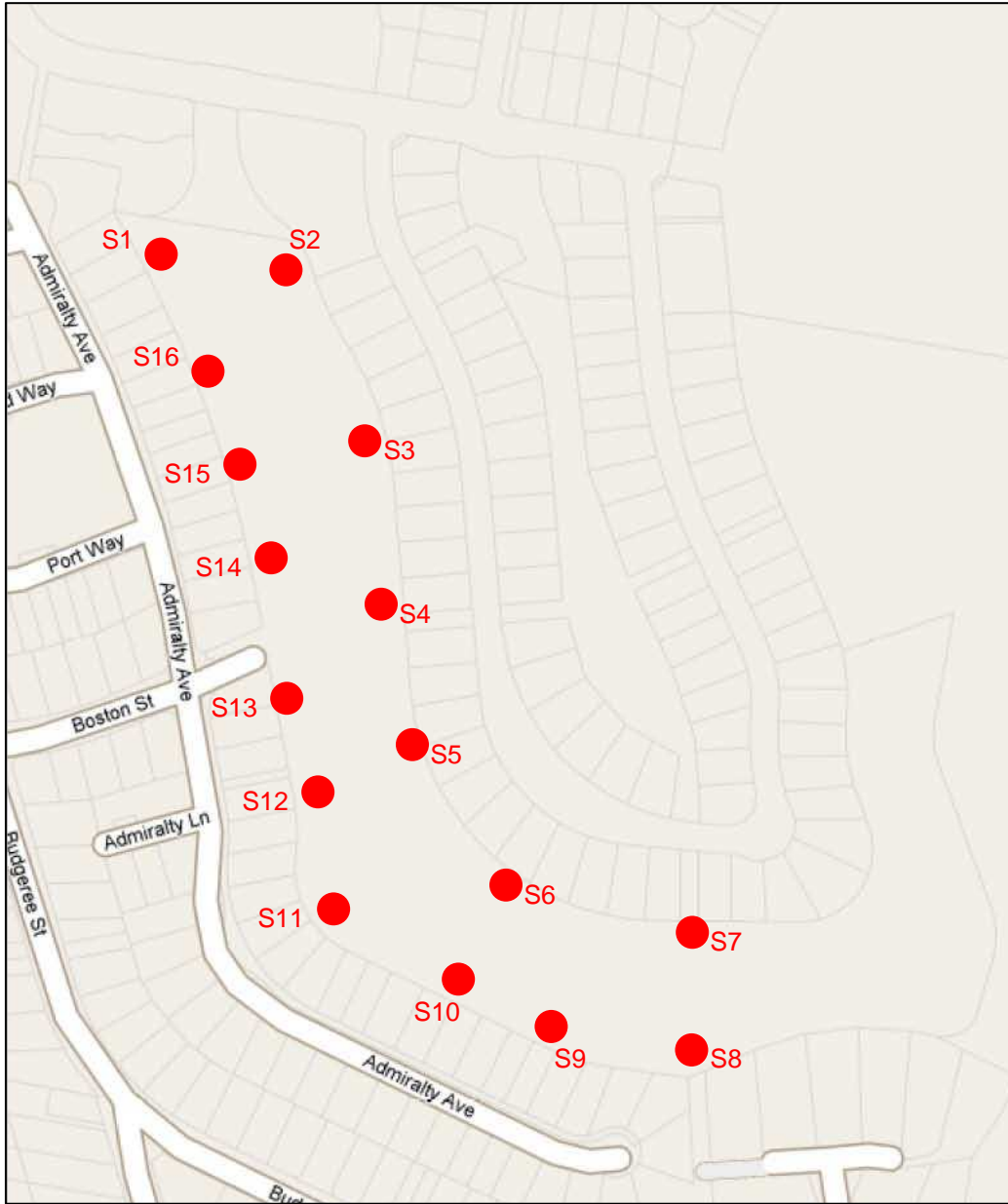
Figure 1
Figure 2
Table LR1
Table LR2
Table LR3
Table LR4
Laboratory Certificates

1 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality', Australian and New Zealand Environment and Conservation Council, 2000.

2 'Pond and Wetland Models, Description and Quality Assurances Report', CRC for Freshwater Ecology, May 2001.



drawn	NLS	 SPECIALISTS IN LIVING AND WORKING PLACES	client:	TATERSALL SURVEYORS PTY LTD		
approved	JAM		project:	MYALL QUAYS DETENTION LAKE TEA GARDENS SEDIMENT SAMPLING AND ANALYSIS		
date	25-10-07		title:	SITE LOCALITY PLAN		
scale	NTS		project no:	ENVIWARA00137AA	figure no:	FIGURE 1
original size	A4					



LEGEND

● APPROXIMATE SAMPLING LOCATIONS


drawn	NLS	 <p>coffey environments</p> <p>SPECIALISTS IN LIVING AND WORKING PLACES</p>	client:	TATERSALL SURVEYORS PTY LTD		
approved	JAM		project:	MYALL QUAYS DETENTION LAKE TEA GARDENS SEDIMENT SAMPLING AND ANALYSIS		
date	25-10-07		title:	SAMPLING LOCATION PLAN		
scale	NTS		project no:	ENVIWARA00137AA	figure no:	FIGURE 2
original size	A4					

TABLE LR2- RESULTS OF CHEMICAL ANALYSES, SEDIMENT ASSESSMENT

		Tattersall Surveyors Pty Ltd Myall Quays Tea Gardens										
		Polynuclear Aromatic Hydrocarbons µg/kg										
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Low Molecular Weight PAHs	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene
ISQG-Low		160	44	16	19	240	85	552	600	665	261	384
ISQG-High		2100	640	500	540	1500	1100	3160	5100	2600	1600	2800
SAMPLE IDENTIFICATION												
S1	DEPTH (m)	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10
S7	0.0-0.05	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10
S9	0.0-0.05	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10
S13	0.0-0.05	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10
D1	0.0-0.05	<10	<10	<10	<10	30	<10	<50	80	70	30	30
TRIP1	0.0-0.05	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500

<PQL

-- Not Analysed

YELLOW SHADED

RED SHADED

BLUE SHADED

PURPLE SHADED

Results Below Practical Quantifiable Limit

Results exceeds ISQG- Low Trigger Value

Results exceeds ISQG- High Trigger Value

Laboratory LOR is greater than ISQG-Low trigger value and less than ISQG-High trigger Value

Laboratory LOR is greater than ISQG-High and results are not able to be interpreted

Criteria from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), Chapter

3.5 Sediment Quality Guidelines.

Benzo[a]pyrene	Dibenzo[a,h]anthracene	High Molecular Weight PAHs
430	63	1700
1600	260	9600
<10	<10	<1000
<10	<10	<1000
<10	<10	<1000
<10	<10	<1000
80	30	<1000
<500	<500	<500

TABLE LR1- RESULTS OF CHEMICAL ANALYSES, SEDIMENT ASSESSMENT

		TPH			BTEX				
		C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	Benzene	Toluene	Ethylbenzene	Xylenes
Client: Project: Location:		Tattersall Surveyors Pty Ltd Myall Quays Tea Gardens							
	ISQG-Low	NE	NE	NE	NE	NE	NE	NE	NE
	ISQG-High	NE	NE	NE	NE	NE	NE	NE	NE
SAMPLE IDENTIFICATION	DEPTH (m)								
	S1	<20	<20	<50	<50	<0.5	<0.5	<0.5	<0.5
	S7	<20	<20	<50	<50	<0.5	<0.5	<0.5	<0.5
	S9	<20	<20	<50	<50	<0.5	<0.5	<0.5	<0.5
	S13	<20	<20	<50	<50	<0.5	<0.5	<0.5	<0.5
	D1	<20	<20	<50	<50	<0.5	<0.5	<0.5	<1.5
	TRIP1	<50	<50	<100	<100	<0.2	<0.5	<0.5	<1.0

<PQL

-- Not Analysed

YELLOW SHADED

RED SHADED

BLUE SHADED

PURPLE SHADED

Results Below Practical Quantifiable Limit

Results exceeds ISQG- Low Trigger Value

Results exceeds ISQG- High Trigger Value

Laboratory LOR is greater than ISQG-Low trigger value and less than ISQG-High trigger Value

Laboratory LOR is greater than ISQG-High and results are not able to be interpreted

Criteria from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), Chapter 3.5 Sediment Quality Guidelines.

TABLE LR3- RESULTS OF CHEMICAL ANALYSES, SEDIMENT ASSESSMENT I
(concentrations in mg/kg for soil tests and mg/L for TCLP tests)

		Tattersall Surveyors Pty Ltd		Orgonochlorine pesticides/PCBs µg/kg									
		Myall Quays		Total DDT	p,p'-DDE	o,p'-+p,p'	Chlordane	Dieldrin	Endrin	Lindane	Total PCBs		
Location:		Tea Gardens		1.6	2.2	2	0.5	0.02	0.02	0.32	23		
				46	70	20	6	8	8	1	-		
ISQG-Low				<1	<1	<2	<2	<1	<1	<1	<10		
ISQG-High				<1	<1	<2	<2	<1	<1	<1	<10		
SAMPLE IDENTIFICATION		DEPTH (m)		<1	<1	<2	<2	<1	<1	<1	<10		
S1	0.0-0.05			<1	<1	<2	<2	<1	<1	<1	<10		
S7	0.0-0.05			<1	<1	<2	<2	<1	<1	<1	<10		
S9	0.0-0.05			<1	<1	<2	<2	<1	<1	<1	<10		
S13	0.0-0.05			<1	<1	<2	<2	<1	<1	<1	<10		
D1	0.0-0.05			<1	<1	<2	<2	<1	<1	<1	<10		
TRIP1	0.0-0.05			<50	<50	<50	<50	<50	<50	<50	<100		

NOTES:

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YELLOW SHADED

RED SHADED

BLUE SHADED

PURPLE SHADED

CRITERIA:

Results Below Practical Quantifiable Limit

Not Analysed

Results exceeds ISQG- Low Trigger Value

Results exceeds ISQG- High Trigger Value

Laboratory LOR is greater than ISQG-Low trigger value and less than ISQG-High trigger Value

Laboratory LOR is greater than ISQG-High and results are not able to be interpreted

Criteria from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), Chapter 3.5 Sediment Quality Guidelines.

TABLE LR4- RESULTS OF CHEMICAL ANALYSES, SEDIMENT ASSESSMENT

Client: Project: Location:		Tattersall Surveyors Pty Ltd Myall Quays Tea Gardens															
		HEAVY METALS/Inorganics mg/kg														Inorganics mg/kg	
		Sb	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Sn	Zn	TP	Nox	TKN		
		2	20	1.5	80	65	50	0.15	21	1	0.005	200	NE	NE	NE		
		25	70	10	370	270	220	1	52	3.7	0.07	410	NE	NE	NE		
SAMPLE IDENTIFICATION	DEPTH (m)																
S1	0.0-0.05	<3	<3	<0.1	4	1.3	4	<0.05	1.3	<2	<2	14	110	<1.25	320		
S2	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S3	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S4	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S5	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S6	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S7	0.0-0.05	<3	3	<0.1	8.4	2.5	4	<0.05	2.7	<2	<2	16	150	<1.25	140		
S8	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S9	0.0-0.05	<3	<3	<0.1	3.4	<0.5	2	0.11	1	<2	<2	3.1	23	<1.25	36		
S10	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S11	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S12	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S13	0.0-0.05	<3	<3	<0.1	2.4	0.7	2	<0.05	0.91	<2	<2	10	53	<1.25	77		
S14	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S15	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
S16	0.0-0.05	NT	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	NT	NT	NT	NT		
D1	0.0-0.05	<3	<3	<0.1	3.3	1.4	5	<0.05	1.1	<2	<2	15	77	<1.25	230		
TRIP1	0.0-0.05	<5	<5	<1	5	<5	5	0.2	<2	<2	<2	20	76	<0.10	690		
%RPD duplicate		NA	NA	NA	19%	7%	22%	NA	17%	NA	NA	7%	35%	NA	33%		
%RPD triplicate		NA	NA	NA	22%	NA	22%	NA	NA	NA	NA	35%	37%	NA	73%		

<PQL

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- Results Below Practical Quantifiable Limit
- Not Analysed
- YELLOW SHADED Results exceeds ISQG- Low Trigger Value
- RED SHADED Results exceeds ISQG- High Trigger Value
- BLUE SHADED Laboratory LOR is greater than ISQG-Low trigger value and less than ISQG-High trigger Value
- PURPLE SHADED Laboratory LOR is greater than ISQG-High and results are not able to be interpreted

Criteria from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), Chapter 3.5 Sediment Quality Guidelines.

24 October 2007

TEST REPORT

Coffey Environments Pty Ltd

Lot 101, 19 Warabrook Blvd
Warabrook
NSW 2304

Your Reference: ENVIWARA00137AA, (COC#11113)
Report Number: 55703

Attention: James McMahon

Dear James

The following samples were received from you on the date indicated.


Samples:	Qty.	21 Soils, 2 Waters
Date of Receipt of Samples:		09/10/07
Date of Receipt of Instructions:		09/10/07
Date Preliminary Report Emailed:		17/10/07

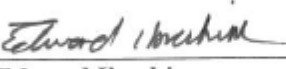
These samples were analysed in accordance with your written instructions.
A copy of the instructions is attached with the analytical report.

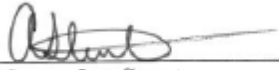
The results and associated quality control are contained in the following pages of this report.
Unless otherwise stated, solid samples are expressed on a dry weight basis (moisture has been supplied for your information only), air and liquid samples as received.

Should you have any queries regarding this report please contact the undersigned.

Yours faithfully
SGS ENVIRONMENTAL SERVICES


Ly Kim Ha
Senior Organic Chemist


Edward Ibrahim
Laboratory Services Manager


Alexandra Stenta
Key Account Representative

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BTEX in Soil Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-1 S1 Soil 05/10/07	55703-7 S7 Soil 05/10/07	55703-9 S9 Soil 05/10/07	55703-13 S13 Soil 05/10/07	55703-17 D1 Soil 05/10/07
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
m-Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
p- Xylene	mg/kg	<0.50	<0.50	<1.0	<0.50	<0.50
o- Xylene	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Total Xylenes	mg/kg	<1.5	<1.5	<1.5	<1.5	<1.5
BTEX Surrogate (%)	%	98	76	76	91	83

BTEX in Soil Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-21 TRIPBLANK Soil 05/10/07	55703-22 TRIPSPIKE Soil 05/10/07
Benzene	mg/kg	<0.5	94%
Toluene	mg/kg	<0.5	98%
Ethylbenzene	mg/kg	<0.5	96%
m-Xylene	mg/kg	<0.5	96%
p- Xylene	mg/kg	<1.0	96%
o- Xylene	mg/kg	<0.50	97%
Total Xylenes	mg/kg	<1.5	97%
BTEX Surrogate (%)	%	122	105%

TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-1 S1 Soil 05/10/07	55703-7 S7 Soil 05/10/07	55703-9 S9 Soil 05/10/07	55703-13 S13 Soil 05/10/07	55703-17 D1 Soil 05/10/07
TRH C ₆ - C ₉ P&T	mg/kg	<20	<20	<20	<20	<20
TRH C ₁₀ - C ₁₄	mg/kg	<20	<20	<20	<20	<20
TRH C ₁₅ - C ₂₈	mg/kg	<50	<50	<50	<50	<50
TRH C ₂₉ - C ₃₆	mg/kg	<50	<50	<50	<50	<50

TRH in soil with..C6-C9 by P/T Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-21 TRIPBLANK Soil 05/10/07
TRH C ₆ - C ₉ P&T	mg/kg	<20
TRH C ₁₀ - C ₁₄	mg/kg	<20
TRH C ₁₅ - C ₂₈	mg/kg	<50
TRH C ₂₉ - C ₃₆	mg/kg	<50

PAHs in Soil Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-1 S1 Soil 05/10/07	55703-7 S7 Soil 05/10/07	55703-9 S9 Soil 05/10/07	55703-13 S13 Soil 05/10/07	55703-17 D1 Soil 05/10/07
Acenaphthene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Acenaphthylene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
2-Methylnaphthanlene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Anthracene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Fluorene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Phenanthrene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.03
Benzo[b,k]fluoranthene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo[a]anthracene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.03
Benzo[a]pyrene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.08
Dibenzo[ah]anthracene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.01
Chrysene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.03
Fluoranthene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.08
Pyrene	mg/kg	0.01	0.01	<0.01	0.01	0.07
Benzo[ghi]perylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
<i>p</i> -Terphenyl- <i>d</i> 14	%	102	102	98	106	106

OC Pesticides in Soil Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-1 S1 Soil 05/10/07	55703-7 S7 Soil 05/10/07	55703-9 S9 Soil 05/10/07	55703-13 S13 Soil 05/10/07	55703-17 D1 Soil 05/10/07
HCB	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Heptachlor	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Heptachlor Epoxide	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Aldrin	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
gamma-BHC (Lindane)	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>alpha</i> -BHC	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>beta</i> -BHC	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>delta</i> -BHC	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>trans</i> -Chlordane	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>cis</i> -Chlordane	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Oxychlordane	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Dieldrin	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>p,p</i> -DDE	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>p,p</i> -DDD	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>p,p</i> -DDT	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Endrin	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Endrin Aldehyde	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Endrin Ketone	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>alpha</i> -Endosulfan	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
<i>beta</i> -Endosulfan	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Endosulfan Sulphate	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Methoxychlor	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate	%	78	67	81	82	87

PCBs in Soil Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-1 S1 Soil 05/10/07	55703-7 S7 Soil 05/10/07	55703-9 S9 Soil 05/10/07	55703-13 S13 Soil 05/10/07	55703-17 D1 Soil 05/10/07
Arochlor 1016	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Arochlor 1221	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Arochlor 1232	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Arochlor 1242	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Arochlor 1248	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Arochlor 1254	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Arochlor 1260	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01

Metals in Soil by ICP-OES Our Reference: Your Reference Sample Type Date Sampled	UNITS ----- -----	55703-1 S1 Soil 05/10/07	55703-7 S7 Soil 05/10/07	55703-9 S9 Soil 05/10/07	55703-13 S13 Soil 05/10/07	55703-17 D1 Soil 05/10/07
Antimony	mg/kg	<3	<3	<3	<3	<3
Arsenic	mg/kg	<3	3	<3	<3	<3
Cadmium	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	mg/kg	4.0	8.4	3.4	2.4	3.3
Copper	mg/kg	1.3	2.5	<0.5	0.7	1.4
Lead	mg/kg	4	4	2	2	5
Nickel	mg/kg	1.3	2.7	1.0	0.91	1.1
Silver	mg/kg	<2	<2	<2	<2	<2
Tin	mg/kg	<2	<2	<2	<2	<2
Zinc	mg/kg	14	16	3.1	10	15
Phosphorus (Total)	mg/kg	110	150	23	53	77

Mercury Cold Vapor/Hg Analyser						
Our Reference:	UNITS	55703-1	55703-7	55703-9	55703-13	55703-17
Your Reference	-----	S1	S7	S9	S13	D1
Sample Type	-----	Soil	Soil	Soil	Soil	Soil
Date Sampled		05/10/07	05/10/07	05/10/07	05/10/07	05/10/07
Mercury	mg/kg	<0.05	<0.05	0.11	<0.05	<0.05

Anions in soil						
Our Reference:	UNITS	55703-1	55703-7	55703-9	55703-13	55703-17
Your Reference	-----	S1	S7	S9	S13	D1
Sample Type	-----	Soil	Soil	Soil	Soil	Soil
Date Sampled		05/10/07	05/10/07	05/10/07	05/10/07	05/10/07
Nitrite as N 1:5 soil:water	mg/kg	<1	<1	<1	<1	<1
Nitrate as N 1:5 soil:water	mg/kg	<0.25	<0.25	<0.25	<0.25	<0.25

Inorganics						
Our Reference:	UNITS	55703-1	55703-7	55703-9	55703-13	55703-17
Your Reference	-----	S1	S7	S9	S13	D1
Sample Type	-----	Soil	Soil	Soil	Soil	Soil
Date Sampled		05/10/07	05/10/07	05/10/07	05/10/07	05/10/07
Total Kjeldahl Nitrogen *	mg/kg	320	140	36	77	230

Trace HM (ICP-MS)-Dissolved Our Reference: Your Reference	UNITS -----	55703-19 BACKGRO UND	55703-20 RINSATE
Sample Type Date Sampled	-----	Water 05/10/07	Water 05/10/07
Antimony	µg/L	<1.0	1.8
Arsenic	µg/L	2.0	2.5
Cadmium	µg/L	<0.10	<0.10
Chromium	µg/L	1.3	1.4
Copper	µg/L	3.7	4.7
Lead	µg/L	<1.0	<1.0
Nickel	µg/L	<1.0	<1.0
Silver	µg/L	4.6	1.9
Zinc	µg/L	11	1.9

Metals in water by ICP-OES			
Our Reference:	UNITS	55703-19	55703-20
Your Reference	-----	BACKGRO	RINSATE
		UND	
Sample Type	-----	Water	Water
Date Sampled		05/10/07	05/10/07
Tin (Dissolved)	mg/L	<0.03	<0.03

Mercury Cold Vapor/Hg Analyser			
Our Reference:	UNITS	55703-19	55703-20
Your Reference	-----	BACKGRO	RINSATE
		UND	
Sample Type	-----	Water	Water
Date Sampled		05/10/07	05/10/07
Mercury (Dissolved)	mg/L	<0.0005	<0.0005

Moisture						
Our Reference:	UNITS	55703-1	55703-7	55703-9	55703-13	55703-17
Your Reference	-----	S1	S7	S9	S13	D1
Sample Type	-----	Soil	Soil	Soil	Soil	Soil
Date Sampled		05/10/07	05/10/07	05/10/07	05/10/07	05/10/07
Moisture	%	26	41	24	25	28

Moisture		
Our Reference:	UNITS	55703-21
Your Reference	-----	TRIPBLANK
Sample Type	-----	Soil
Date Sampled		05/10/07
Moisture	%	<1

Method ID	Methodology Summary
SEO-018	BTEX - Determination by purge and trap/ Gas Chromatography with MS Detection.
SEO-017	BTEX/TRH C6-C9 - Determination by Purge and Trap Gas Chromatography with Flame Ionisation Detection (FID) and Photo Ionisation Detection (PID). The surrogate spike used is aaa-trifluorotoluene.
SEO-020	TRH - Determination of Total Recoverable Hydrocarbons by gas chromatography following extraction with DCM/Acetone for solids and DCM for liquids.
Ext-003	Analysis subcontracted to SGS Environmental Perth.
SEO-030	PAHs by GC/MS - Determination of Polynuclear Aromatic Hydrocarbons (PAH's) by Gas Chromatography / Mass Spectrometry following extraction with dichloromethane or dichloromethane/acetone. The surrogate spike used is p-Terphenyl-d14.
Ext-048	Subcontracted analysis to Analytical National Measurement Institute, NSW.
SEO-005	OC/OP/PCB - Determination of a suite of Organchlorine Pesticides, Chlorinated Organo-phosphorus Pesticides and Polychlorinated Biphenyls (PCB's) by sonication extraction using dichloromethane for waters or acetone / hexane for soils followed by Gas Chromatographic separation with Electron Capture Detection (GC/ECD). The surrogate spike used is 2,4,5,6-Tetrachloro-m-xylene.
SEM-010	Metals - Determination of various metals by ICP-AES following aqua regia digest.
SEM-005	Mercury - Determination of Mercury by Cold Vapour Generation Atomic Absorption Spectroscopy.
SEI-038	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA 20th ED, 4110-B.
Ext-043	Subcontracted to LabPoint. Nata Accreditation No: 11111
AN318	Determination of elements at trace levels in waters by ICP-MS. Method based on USEPA 6020A
AN320	Metals - Determination of various metals by ICP-OES at trace levels following aqua regia digest.
AN002	Preparation of soils, sediments and sludges undergo analysis by either air drying, compositing, subsampling and 1:5 soil water extraction where required. Moisture content is determined by drying the sample at 105 ± 5°C.

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
BTEX in Soil								
Benzene	mg/kg	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	87 [N/T]
Toluene	mg/kg	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	89 [N/T]
Ethylbenzene	mg/kg	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	88 [N/T]
m-Xylene	mg/kg	0.5	SEO-018	<0.5	[NT]	[NT]	LCS	90 [N/T]
p- Xylene	mg/kg	0.5	SEO-018	<0.50	[NT]	[NT]	LCS	90 [N/T]
o- Xylene	mg/kg	0.5	SEO-018	<0.50	[NT]	[NT]	LCS	92 [N/T]
Total Xylenes	mg/kg	1.5	SEO-018	<1.5	[NT]	[NT]	LCS	91 [N/T]
BTEX Surrogate (%)	%	0	SEO-018	105	[NT]	[NT]	LCS	112 [N/T]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
TRH in soil with..C6-C9 by P/T								
TRH C6 - C9 P&T	mg/kg	20	SEO-017	<20	[NT]	[NT]	LCS	98 [N/T]
TRH C10 - C14	mg/kg	20	SEO-020	<20	[NT]	[NT]	LCS	100 [N/T]
TRH C15 - C28	mg/kg	50	SEO-020	<50	[NT]	[NT]	LCS	95 [N/T]
TRH C29 - C36	mg/kg	50	SEO-020	<50	[NT]	[NT]	LCS	106 [N/T]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
PAHs in Soil								
Acenaphthene	mg/kg	0.01	Ext-003	<0.01	55703-1	<0.01 <0.01	[NR]	[NR]
Acenaphthylene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	[NR]	[NR]
2-Methylnaphthylene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	[NR]	[NR]
Anthracene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	[NR]	[NR]
Fluorene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	55703-1	101 91 RPD: 10
Naphthalene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	55703-1	90 80 RPD: 12
Phenanthrene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	55703-1	97 104 RPD: 7
Benzo[b,k]fluoranthene	mg/kg	0.5	Ext-003	[NT]	55703-1	<0.5 <0.5	[NR]	[NR]
Benzo[a]anthracene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 0.01	55703-1	93 109 RPD: 16
Benzo[a]pyrene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 0.02	55703-1	113 132 RPD: 16
Dibenzo[ah]anthracene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	55703-1	111 106 RPD: 5
Chrysene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 <0.01	[NR]	[NR]
Fluoranthene	mg/kg	0.01	SEO-030	<0.01	55703-1	<0.01 0.02	[NR]	[NR]
Pyrene	mg/kg	0.01	SEO-030	<0.01	55703-1	0.01 0.02 RPD: 67	55703-1	102 126 RPD: 21
Benzo[ghi]perylene	mg/kg	1	Ext-003	[NT]	55703-1	<1.0 <1.0	[NR]	[NR]
p -Terphenyl-d 14	%	0	SEO-030	108	55703-1	102 102 RPD: 0	55703-1	108 106 RPD: 2

QUALITY CONTROL OC Pesticides in Soil	UNITS	PQL	METHOD	Blank
HCB	mg/kg	0.001	Ext-048	<0.001
Heptachlor	mg/kg	0.001	SEO-005	<0.001
Heptachlor Epoxide	mg/kg	0.001	SEO-005	<0.001
Aldrin	mg/kg	0.001	SEO-005	<0.001
gamma-BHC (Lindane)	mg/kg	0.001	SEO-005	<0.001
<i>alpha</i> -BHC	mg/kg	0.001	SEO-005	<0.001
<i>beta</i> -BHC	mg/kg	0.001	SEO-005	<0.001
<i>delta</i> -BHC	mg/kg	0.001	SEO-005	<0.001
<i>trans</i> -Chlordane	mg/kg	0.001	SEO-005	<0.001
<i>cis</i> -Chlordane	mg/kg	0.001	SEO-005	<0.001
Oxychlordane	mg/kg	0.001	SEO-005	<0.001
Dieldrin	mg/kg	0.001	SEO-005	<0.001
<i>p,p</i> -DDE	mg/kg	0.001	SEO-005	<0.001
<i>p,p</i> -DDD	mg/kg	0.001	SEO-005	<0.001
<i>p,p</i> -DDT	mg/kg	0.001	SEO-005	<0.001
Endrin	mg/kg	0.001	SEO-005	<0.001
Endrin Aldehyde	mg/kg	0.001	SEO-005	<0.001
Endrin Ketone	mg/kg	0.001	SEO-005	<0.001
<i>alpha</i> -Endosulfan	mg/kg	0.001	SEO-005	<0.001
<i>beta</i> -Endosulfan	mg/kg	0.001	SEO-005	<0.001
Endosulfan Sulphate	mg/kg	0.001	SEO-005	<0.001
Methoxychlor	mg/kg	0.001	SEO-005	<0.001
Surrogate	%	0	SEO-005	[NT]

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank				
Arochlor 1016	mg/kg	0.01	SEO-005	<0.01				
Arochlor 1221	mg/kg	0.01	SEO-005	<0.01				
Arochlor 1232	mg/kg	0.01	SEO-005	<0.01				
Arochlor 1242	mg/kg	0.01	SEO-005	<0.01				
Arochlor 1248	mg/kg	0.01	SEO-005	<0.01				
Arochlor 1254	mg/kg	0.01	SEO-005	<0.01				
Arochlor 1260	mg/kg	0.01	SEO-005	<0.01				
QUALITY CONTROL Metals in Soil by ICP-OES	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Antimony	mg/kg	3	SEM-010	<3	[NT]	[NT]	LCS	109 [N/T]
Arsenic	mg/kg	3	SEM-010	<3	[NT]	[NT]	LCS	104 [N/T]
Cadmium	mg/kg	0.1	SEM-010	<0.1	[NT]	[NT]	LCS	109 [N/T]
Chromium	mg/kg	0.3	SEM-010	<0.3	[NT]	[NT]	LCS	103 [N/T]
Copper	mg/kg	0.5	SEM-010	<0.5	[NT]	[NT]	LCS	107 [N/T]
Lead	mg/kg	1	SEM-010	<1	[NT]	[NT]	LCS	106 [N/T]
Nickel	mg/kg	0.5	SEM-010	<0.5	[NT]	[NT]	LCS	107 [N/T]
Silver	mg/kg	2	SEM-010	<2	[NT]	[NT]	LCS	118 [N/T]
Tin	mg/kg	2	SEM-010	<2	[NT]	[NT]	LCS	103 [N/T]
Zinc	mg/kg	0.3	SEM-010	<0.3	[NT]	[NT]	LCS	107 [N/T]
Phosphorus (Total)	mg/kg	0.1	SEM-010	<0.10	[NT]	[NT]	LCS	100 [N/T]
QUALITY CONTROL Mercury Cold Vapor/Hg Analyser	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Mercury	mg/kg	0.05	SEM-005	<0.05	[NT]	[NT]	LCS	77 [N/T]
QUALITY CONTROL Anions in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Nitrite as N 1:5 soil:water	mg/kg	1	SEI-038	<1	55703-1	<1 <1	LCS	102 [N/T]
Nitrate as N 1:5 soil:water	mg/kg	0.25	SEI-038	<0.25	55703-1	<0.25 <0.25	LCS	104 [N/T]
QUALITY CONTROL Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Total Kjeldahl Nitrogen *	mg/kg	1.0	Ext-043	<1.0	55703-1	320 [N/T]	55703-1	90 [N/T]
QUALITY CONTROL Trace HM (ICP-MS)-Dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Antimony	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	125 [N/T]
Arsenic	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	100 [N/T]

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Trace HM (ICP-MS)-Dissolved								
Cadmium	µg/L	0.1	AN318	<0.10	[NT]	[NT]	LCS	101 [N/T]
Chromium	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	102 [N/T]
Copper	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	106 [N/T]
Lead	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	99 [N/T]
Nickel	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	96 [N/T]
Silver	µg/L	1	AN320	<1.0	[NT]	[NT]	LCS	90 [N/T]
Zinc	µg/L	1	AN318	<1.0	[NT]	[NT]	LCS	102 [N/T]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Metals in water by ICP-OES								
Tin (Dissolved)	mg/L	0.03	SEM-010	<0.03	[NT]	[NT]	LCS	97 [N/T]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Matrix Spike % Recovery Duplicate + %RPD
Mercury Cold Vapor/Hg Analyser								
Mercury (Dissolved)	mg/L	0.0005	SEM-005	<0.0005	[NT]	[NT]	LCS	97 [N/T]
QUALITY CONTROL	UNITS	PQL	METHOD	Blank				
Hold sample- NO test required								
Sample on HOLD				[NT]				
QUALITY CONTROL	UNITS	PQL	METHOD	Blank				
Moisture								
Moisture	%	1	AN002	<1				
QUALITY CONTROL	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD					
Inorganics								
Total Kjeldahl Nitrogen *	mg/kg	55703-17	230 220 RPD: 4					

Result Codes

[INS]	: Insufficient Sample for this test	[HBG]	: Results not Reported due to High Background Interference
[NR]	: Not Requested	*	: Not part of NATA Accreditation
[NT]	: Not tested	[N/A]	: Not Applicable

Result Comments

PAH in Soil was analysed by SGS Perth with Report No 13739.

OC/PCB in Soil were analysed by NMI with Report No SGSA01/071010.

Date Organics extraction commenced: 10/10/07

NATA Corporate Accreditation No. 2562, Site No 4354

Note: Test results are not corrected for recovery (excluding Dioxins/Furans* and PAH in XAD and PUF).

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Quality Control Protocol

Reagent Blank: Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. For larger projects, a reagent blank is prepared and analysed with every 20 samples.

Duplicate: A separate portion of a sample being analysed which is treated the same as the other samples in the batch. A duplicate is prepared at least every 10 samples.

Matrix Spike Duplicates: Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction/digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water (or Milli-Q water) may be used. A duplicate spiked sample is prepared at least every 20 samples.

Surrogate Spike: Added to all samples requiring analysis for organics (where relevant) prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples.

Internal Standard: Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments.

Control Standards: Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity.

Additional QC Samples: A calibration standard and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift.



Chain of Custody

S151-52

wlas

No: 11113

1 of 2

Dispatch to: SGS Laboratories
16/33 Muddox St Alexandria

Laboratory Quotation / Order No: S184-89 JJT

Job No: ENUWAG00137A

Sampled by: Jonathan Tonk

Consigning Officer:
Date Dispatched:

Attention: Logan

Project Manager: James Mahon

Courier Service: TNT
Consignment Note No:

Relinquished by:

Date:

Time:

Received by: Earlygin

Date: 9/10

Time: 3:30

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required							Sample Condition on Receipt
					PAHs	TPHs	Metals: *As, Pb, Cd, Cr, Ni, Ag, Zn, Cu	OC/POB	Nutrients	Other	Other	
3	Soil Soil jars		S1	5/10/07	X	X	X	X	X			
4			S2		HOLD							
5			S3		HOLD							
6			S4		HOLD							
7			S5		HOLD							
8			S6		HOLD							
9			S7		X	X	X	X	X			
10			S8		HOLD							
11			S9		X	X	X	X	X			
12			S10		HOLD							
13			S11		HOLD							
14			S12		HOLD							
15			S13		X	X	X	X	X			
16			S14		HOLD							
17			S15		HOLD							
18			S16		HOLD							
				D1		X	X	X	X	X		

Received 9/10/07
By: [Signature]
Time: 3:30
Samples: [Signature]
User: [Signature]
Comments: 45703

Special Laboratory Instructions: ALL ANALYSIS to be conducted by ANZGCC Sediment guidelines
*Heavy Metals Sb, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn, As, Sn
detection limit

Turnaround Required:

Nutrients = Total Phosphorus, TKN, Nitrate, Nitrite

JOB NUMBER MUST BE REFERENCED ON ALL SUBSEQUENT PAGES

Copies: WHITE: Sign on release, YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey, BLUE: To be returned with results.



Chain of Custody

No: 11114

Laboratory Quotation / Order No: S18489 SJT

Dispatch to:
(Address &
Phone No.)

SGS Labs

Sampled by:

Jonathan Tonks

Consigning Officer:

Date Dispatched:

Attention:

Login

Project Manager:
(report results to)

James Mahon

Courier Service:

Consignment Note No:

Relinquished by:

Date:

Time:

Received by:

Date:

Time:

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	MMP BTEX	Metals:	Analyses Required						Sample Condition on Receipt			
									As	Cd	Pb	Cu	Zn	Cr		Ag	Ni	Hg
18	Soil	Soil jar	TRIP1	5/10/07	X	X	X	X	X	X	X	X	X	X				
19	Water	Metals bottle	BACKGROUND		X	X	X	X	X	X	X	X	X	X				
20	Water	Metals bottle	RINSSATE		X	X	X	X	X	X	X	X	X	X				
21	Water	Soil Vial	TRIP BLANK		X	X	X	X	X	X	X	X	X	X				
22	Water	Soil Vial	TRIP SAIKE		X	X	X	X	X	X	X	X	X	X				
23	Soil	Soil jar	DZ.	↓	HOLD													

Special Laboratory Instructions: ALL ANALYSIS to be conducted by ANZECC GUIDELINES (sediments), detection limit
* Heavy metals Sb, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn, As, Sn. Nutrients = Total Phosphorus
TURNGROUND REQUIRED: FCN, Nitrate, P & etc

Copies: WHITE: Sign on release. YELLOW: If dispatched to Interstate Lab, Lab to sign on receipt and fax back to Coffey. BLUE: To be returned with results.



PURCHASE ORDER

S 18489 **JJT**

Coffey Environments Pty Ltd ABN 45 090 522 759

DATE	9/10/07
SHIP TO	19 Warabrook Boulevard Warabrook NSW 2304

TO SBS Laboratories
16/33 Maddox St.
Alexandria NSW 2015

JOB NAME <u>Myall Keys</u>	PROJECT MANAGER <u>James McMahon</u>	JOB # <u>ENVWVARAC00137A A</u> S18489 JJT	TASK # <u>Sampling</u>
-------------------------------	---	--	---------------------------

QTY. ORDERED	STOCK NO. / DESCRIPTION	UNIT PRICE	TOTAL

This purchase order is issued in accordance with the Terms & Conditions as listed overleaf.


P. O. ORIGINATOR


APPROVED BY

AU.SampleReceipt.Sydney (Sydney)

From: Jonathan Tonks [Jonathan_Tonks@coffey.com]
Sent: Tuesday, 9 October 2007 3:29 PM
To: AU.SampleReceipt.Sydney (Sydney)
Subject: Attention Alex/Angelica
Importance: High
Attachments: 1285_001.pdf

In regard to the fax regarding the samples which arrived without a COC (ENVIRHOD00137AA) there were a couple of things I forgot to mention. The trip blank and spike are soil, not water as per the COC. Also, as we were late back, the samples went into the fridge and we forgot to put the trip blank and spike back in. They will be arriving tomorrow morning with the original paperwork; could you please test that as the same job please?

Thanks again

JONATHAN TONKS
Environmental Scientist

Coffey Environments Pty Ltd
19 Warabrook Boulevard Warabrook NSW 2304 Australia
T (+61) (2) 4016 2300 F (+61) (2) 4016 2380 M 0420 960 040
www.coffey.com

From: COFFEY GEOTECHNICS P/L [mailto:Wara_Scan@coffey.com.au]
Sent: Tuesday, 9 October 2007 2:38 PM
To: Jonathan Tonks
Subject: Attached Image

Company Notice: To reflect our increasing global footprint, we no longer have .au on our web and email addresses.

Please update your databases, address books and bookmarks to:

www.coffey.com
firstname_lastname@coffey.com

Environmental Notice: Please consider the environment before printing this email.

Confidentiality Notice: The content of this message and any attachments may be privileged, in confidence or sensitive. Any unauthorised use is expressly prohibited. If you have received this email in error please notify the sender, disregard and then delete the email. This email may have been corrupted or interfered with. Coffey International Limited cannot guarantee that the message you receive is the same as the message we sent. At Coffey International Limited's discretion we may send a paper copy for confirmation. In the event of any discrepancy between paper and electronic versions the paper version is to take precedence. No warranty is made that this email and its contents are free from computer viruses or other defects.

CILDISCL0004



CERTIFICATE OF ANALYSIS

<i>Client</i>	: COFFEY ENVIRONMENTS PTY LTD	<i>Laboratory</i>	: Environmental Division Sydney	<i>Page</i>	: 1 of 6
<i>Contact</i>	: MR JAMES MCMAHON	<i>Contact</i>	: Victor Kedicicoglu	<i>Work Order</i>	: ES0714015
<i>Address</i>	: 19 WARABROOK BOULEVARD WARABROOK NSW AUSTRALIA 2304	<i>Address</i>	: 277-289 Woodpark Road Smithfield NSW Australia 2164		
<i>E-mail</i>	: james_mcmahon@coffey.com	<i>E-mail</i>	: Victor.Kedicicoglu@alsenviro.com		
<i>Telephone</i>	: 4016 2300	<i>Telephone</i>	: +61-2-8784 8555		
<i>Facsimile</i>	: 4016 2380	<i>Facsimile</i>	: +61-2-8784 8500		
<i>Project</i>	: ENVIWARA00137AA	<i>Quote number</i>	: EN/007/07	<i>Date received</i>	: 10 Oct 2007
<i>Order number</i>	: S18489			<i>Date issued</i>	: 18 Oct 2007
<i>C-O-C number</i>	: 11114			<i>No. of samples</i>	: - Received : 1
<i>Site</i>	: - Not provided -				: - Analyzed : 1

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory
825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.



This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatory</i>	<i>Position</i>	<i>Department</i>
Ankit Joshi	Inorganic Chemist	Inorganics - NATA 825 (10911 - Sydney)
Celine Conceicao	Spectroscopist	Inorganics - NATA 825 (10911 - Sydney)
Hoa Nguyen		Inorganics - NATA 825 (10911 - Sydney)
PHALAK INTHAKESONE	Organics Co-ordinator	Inorganics - NATA 825 (10911 - Sydney)
PHALAK INTHAKESONE	Organics Co-ordinator	Organics - NATA 825 (10911 - Sydney)

Comments

This report for the ALSE reference ES0714015 supersedes any previous reports with this reference. Results apply to the sample as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- 1 Analytical Results for Samples Submitted
- 1 Surrogate Recovery Data

The analytical procedures used by ALS Environmental 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insufficient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.



Analytical Results

Analyte	CAS number	Client Sample ID :		TRIP1
		LOR	Units	
		Sample Matrix Type / Description :		SOIL
		Laboratory Sample ID :		
		Sample Date / Time :		ES0714015-001
		Laboratory Sample ID :		
EA055: Moisture Content		1.0	%	33.4
Moisture Content (dried @ 103°C)				
EG005T: Total Metals by ICP-AES				
Antimony	7440-36-0	5	mg/kg	<5
Arsenic	7440-38-2	5	mg/kg	<5
Cadmium	7440-43-9	1	mg/kg	<1
Chromium	7440-47-3	2	mg/kg	5
Copper	7440-50-8	5	mg/kg	<5
Lead	7439-92-1	5	mg/kg	5
Nickel	7440-02-0	2	mg/kg	<2
Silver	7440-22-4	2	mg/kg	<2
Tin	7440-31-5	5	mg/kg	<5
Zinc	7440-66-6	5	mg/kg	20
EG035T: Total Mercury by FIMS				
Mercury	7439-97-6	0.1	mg/kg	0.2
EK057G: Nitrite as N by Discrete Analyser				
Nitrite as N (Sol.)		0.100	mg/kg	<0.100
EK058G: Nitrate as N by Discrete Analyser				
Nitrate as N (Sol.)		0.100	mg/kg	<0.100
EK059G: NOX as N by Discrete Analyser				
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100
EK061G: Total Kjeldahl Nitrogen as N				
Total Kjeldahl Nitrogen as N		20	mg/kg	690
EK067G: Total Phosphorus as P by Discrete Analyser				
Total Phosphorus as P		2	mg/kg	76
EP066: Polychlorinated Biphenyls (PCB)				
Total Polychlorinated biphenyls		0.10	mg/kg	<0.10
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



Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID :	Sample Matrix Type / Description :	TRIP1	SOIL	5 Oct 2007	15:00	ES0714015-001
EP068A: Organochlorine Pesticides (OC)										
cis-Chlordane	5103-71-9	0.05	mg/kg							<0.05
Dieldrin	60-57-1	0.05	mg/kg							<0.05
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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
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
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
EP080/071: Total Petroleum Hydrocarbons										
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
EP080: BTEX										
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



Analytical Results

Analyte	CAS number	Client Sample ID :		TRIP1			
		LOR	Units				
EP080: BTEX				SOIL			
meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5			
	106-42-3						
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5			
EP066S: PCB Surrogate							
Decachlorobiphenyl	2051-24-3	0.1	%	84.7			
EP068S: Organochlorine Pesticide Surrogate							
Dibromo-DDE	21655-73-2	0.1	%	97.4			
EP068T: Organophosphorus Pesticide Surrogate							
DEF	78-48-8	0.1	%	100			
EP075(SIM)S: Phenolic Compound Surrogates							
Phenol-d6	13127-88-3	0.1	%	103			
2-Chlorophenol-D4	93951-73-6	0.1	%	102			
2,4,6-Tribromophenol	118-79-6	0.1	%	76.7			
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.1	%	104			
Anthracene-d10	1719-06-8	0.1	%	93.7			
4-Terphenyl-d14	1718-51-0	0.1	%	99.0			
EP080S: TPH(V)/BTEX Surrogates							
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.9			
Toluene-D8	2037-26-5	0.1	%	92.9			
4-Bromofluorobenzene	460-00-4	0.1	%	98.6			



Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits		Surrogate Control Limits	
Method name	Analyte name	Lower Limit	Upper Limit
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides by GCMS			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	136
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

Important information about your **Coffey** Environmental Report

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of the land and to delays in the redevelopment of land. These uncertainties are an inherent part of dealing with land contamination. The following notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey and applies only to the site or area investigated. For example, the purpose of your report may be:

- To assess the environmental effects of an on-going operation.
- To provide due diligence on behalf of a property vendor.
- To provide due diligence on behalf of a property purchaser.
- To provide information related to redevelopment of the site due to a proposed change in use, for example, industrial use to a residential use.
- To assess the existing baseline environmental, and sometimes geological and hydrological conditions or constraints of a site prior to an activity which may alter the sites environmental, geological or hydrological condition.

For each purpose, a specific approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible, quantify risks that both recognised and unrecognised contamination pose to the proposed activity. Such risks may be both financial (for example, clean up costs or limitations to the site use) and physical (for example, potential health risks to users of the site or the general public).

Scope of Investigations

The work was conducted, and the report has been prepared, in response to specific instructions from the client to whom this report is addressed, within practical time and budgetary constraints, and in reliance on certain data and information made available to Coffey. The analyses, evaluations, opinions and conclusions presented in this report are based on those instructions, requirements, data or information, and they could change if such instructions etc. are in fact inaccurate or incomplete.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project and/or on the property.

Interpretation of factual data

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect field measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of Coffey through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other problems encountered on site.

Important information about your **Coffey** Environmental Report

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered with redevelopment or on-going use of the site. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. In particular, a due diligence report for a property vendor may not be suitable for satisfying the needs of a purchaser. Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other professionals who are affected by the report. Have Coffey explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Contact Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to land development and land use. It is common that not all approaches will be necessarily dealt with in your environmental site assessment report due to concepts proposed at that time. As a project progresses through planning and design toward construction and/or maintenance, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Environmental reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.