

APPENDIX A

Chain of Custody Documentation and Laboratory Certificates



ANALYTICAL CHEMISTRY & TESTING SERVICES

(ALS)

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	EP1204883	Page	: 1 of 6
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Perth
Contact	: MS KEELY MUNDLE	Contact	: Tracy Presland
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	WEST PERTH WA 6872		
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Project	: 117643092	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	:		
C-O-C number	: Q8150	Date Samples Received	: 19-JUN-2012
Sampler	: SV	Issue Date	: 25-JUN-2012
Site	:		
		No. of samples received	: 2
Quote number	: EN/002/10 BQ	No. of samples analysed	: 2

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

		Agnes Szilagyi		Senior Org	anic Ch	hemist		Perth	Organics	6			
	ISO/IEC 17025.	Signatories		Position				Accrea	ditation Ca	ategory			
ATA	Accredited for compliance with	carried out in compliance w	th procedures spe	ecified in 21 (CFR Pa	art 11.							
$\boldsymbol{\wedge}$	NATA Accredited Laboratory 825	<i>Signatories</i> This document has bee	n electronically	signed by	the	authorized	signatories	indicated	below.	Electronic	signing	has	been

WORLD RECOGNISED

Environmental Division Perth Part of the ALS Laboratory Group 10 Hod Way Malaga WA Australia 6090 Tel. +61-8-9209 7655 Fax. +61-8-9209 7600 www.atsglobal.com A Campbell Brothers Limited Company



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



Sub-Matrix: WATER		Clie	ent sample ID	Q8150 - 01	Q8150 - 02	 	
	Cli	ient sampliı	ng date / time	19-JUN-2012 11:30	19-JUN-2012 11:30	 	
Compound	CAS Number	LOR	Unit	EP1204883-001	EP1204883-002	 	
EP074A: Monocyclic Aromatic Hydro	carbons						
Benzene	71-43-2	1	µg/L	<1	<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	 	
Styrene	100-42-5	5	µg/L	<5	<5	 	
ortho-Xylene	95-47-6	2	µg/L		<2	 	
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	 	
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	 	
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	 	
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	 	
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	 	
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	 	
p-IsopropyItoluene	99-87-6	5	µg/L	<5	<5	 	
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	 	
EP074B: Oxygenated Compounds							
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	 	
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	 	
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	 	
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	 	
EP074C: Sulfonated Compounds							
Carbon disulfide	75-15-0	5	µg/L	<5	<5	 	
EP074D: Fumigants							
2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	 	
1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	 	
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	 	
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	 	
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	 	
EP074E: Halogenated Aliphatic Com	pounds						
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	 	
Chloromethane	74-87-3	50	µg/L	<50	<50	 	
Vinyl chloride	75-01-4	50	µg/L	<50	<50	 	
Bromomethane	74-83-9	50	µg/L	<50	<50	 	
Chloroethane	75-00-3	50	µg/L	<50	<50	 	
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	 	
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	 	
lodomethane	74-88-4	5	µg/L	<5	<5	 	
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	 	
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	 	



Sub-Matrix: WATER		Clie	ent sample ID	Q8150 - 01	Q8150 - 02	 	
	Cli	ent samplii	ng date / time	19-JUN-2012 11:30	19-JUN-2012 11:30	 	
Compound	CAS Number	LOR	Unit	EP1204883-001	EP1204883-002	 	
EP074E: Halogenated Aliphatic Compour	nds - Continued						
cis-1.2-Dichloroethene	156-59-2	5	µg/L	39	<5	 	
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	 	
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	 	
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	 	
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	 	
Trichloroethene	79-01-6	5	µg/L	6	<5	 	
Dibromomethane	74-95-3	5	µg/L	<5	<5	 	
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	 	
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	 	
Tetrachloroethene	127-18-4	5	µg/L	10	<5	 	
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	 	
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	 	
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	 	
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	 	
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	 	
Pentachloroethane	76-01-7	5	µg/L	<5	<5	 	
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	 	
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	 	
EP074F: Halogenated Aromatic Compour	nds						
Chlorobenzene	108-90-7	5	µg/L	<5	<5	 	
Bromobenzene	108-86-1	5	µg/L	<5	<5	 	
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	 	
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	 	
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	 	
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	 	
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	 	
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	 	
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	 	
EP074G: Trihalomethanes							
Chloroform	67-66-3	5	µg/L	<5	<5	 	
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	 	
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	 	
Bromoform	75-25-2	5	µg/L	<5	<5	 	
EP074H: Naphthalene							
Naphthalene	91-20-3	7	µg/L		<7	 	
EP080/071: Total Petroleum Hydrocarbor	IS						
C6 - C9 Fraction		20	µg/L	30	<20	 	
C10 - C14 Fraction		50	µg/L	<50		 	



Sub-Matrix: WATER		Clie	ent sample ID	Q8150 - 01	Q8150 - 02	 	
	Cl	ient sampli	ng date / time	19-JUN-2012 11:30	19-JUN-2012 11:30	 	
Compound	CAS Number	LOR	Unit	EP1204883-001	EP1204883-002	 	
EP080/071: Total Petroleum Hydroca	rbons - Continued						
C15 - C28 Fraction		100	µg/L	<100		 	
C29 - C36 Fraction		50	µg/L	<50		 	
^ C10 - C36 Fraction (sum)		50	µg/L	<50		 	
EP080/071: Total Recoverable Hydro	carbons - NEPM 201	0 Draft					
C6 - C10 Fraction		20	µg/L	40	<20	 	
[^] C6 - C10 Fraction minus BTEX (F1)		20	µg/L	40	<20	 	
>C10 - C16 Fraction		100	µg/L	<100		 	
>C16 - C34 Fraction		100	µg/L	<100		 	
>C34 - C40 Fraction		100	µg/L	<100		 	
^ >C10 - C40 Fraction (sum)		100	µg/L	<100		 	
EP080: BTEXN							
Benzene	71-43-2	1	µg/L	<1	<1	 	
Toluene	108-88-3	2	µg/L	<2	<2	 	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	 	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	 	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	 	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	 	
[^] Sum of BTEX		1	µg/L	<1	<1	 	
Naphthalene	91-20-3	5	µg/L	<5	<5	 	
EP074S: VOC Surrogates							
1.2-Dichloroethane-D4	17060-07-0	0.1	%	97.5	108	 	
Toluene-D8	2037-26-5	0.1	%	101	100	 	
4-Bromofluorobenzene	460-00-4	0.1	%	95.7	92.9	 	
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4	17060-07-0	0.1	%	107	118	 	
Toluene-D8	2037-26-5	0.1	%	96.7	94.9	 	
4-Bromofluorobenzene	460-00-4	0.1	%	98.3	94.3	 	

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Project	: 117643092

ALS

Surrogate Control Limits

Sub-Matrix: WATER		Recover	y Limits (%)
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	62.3	133.9
Toluene-D8	2037-26-5	74.5	124.3
4-Bromofluorobenzene	460-00-4	63.9	118.5
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	60.5	141.2
Toluene-D8	2037-26-5	73.4	126
4-Bromofluorobenzene	460-00-4	59.6	125.3

Environmental Division



QUALITY CONTROL REPORT

Work Order	EP1204883	Page	: 1 of 11
Client	GOLDER ASSOCIATES	Laboratory	: Environmental Division Perth
Contact	: MS KEELY MUNDLE	Contact	: Tracy Presland
Address	: PO BOX 1914	Address	: 10 Hod Way Malaga WA Australia 6090
	WEST PERTH WA 6872		
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Telephone	: +61 08 9213 8249	Telephone	: 08 9209 7604
Facsimile	: +61 08 9427 7611	Facsimile	: 08 9209 7600
Project	: 117643092	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	:		
C-O-C number	: Q8150	Date Samples Received	: 19-JUN-2012
Sampler	: SV	Issue Date	: 25-JUN-2012
Order number	:		
		No. of samples received	: 2
Quote number	: EN/002/10 BQ	No. of samples analysed	: 2

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

NATA Accredited Laboratory 825		Signatories This document has been e	Signatories This document has been electronically signed by the authorized signatories indicated below. Electronic carried out in compliance with procedures specified in 21 CFR Part 11.						
	ISO/IEC 17025.	Signatories	Position	Accreditation Category					
		Agnes Szilagyi	Senior Organic Chemist	Perth Organics					
WORLD RECOGNISED									
		Enviro	nmental Division Perth						

Part of the ALS Laboratory Group 10 Hod Way Malaga WA Australia 6090 Tel. +61-8-9209 7655 Fax. +61-8-9209 7600 www.alsglobal.com

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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

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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: WATER					Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP074A: Monocyclic	Aromatic Hydrocarbo	ns (QC Lot: 2362062)								
EP1204845-004	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit	
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit	
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit	
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit	
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit	
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit	
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit	
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit	
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit	
EP1204880-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit	
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit	
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit	
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit	
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit	
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit	
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit	
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit	
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit	
EP074B: Oxygenate	d Compounds (QC Lot	: 2362062)								
EP1204845-004	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit	
		EP074: 2-Butanone (MEK)	78-93-3	50	μg/L	<50	<50	0.0	No Limit	
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	μg/L	<50	<50	0.0	No Limit	
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit	

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Project	: 117643092



Sub-Matrix: WATER			Г	Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074B: Oxygenate	d Compounds (QC Lot	2362062) - continued						(**)	
EP1204880-001	Anonymous	EP074: Vinvl Acetate	108-05-4	50	μg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	μg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	μg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated	Compounds (QC Lot: 2	2362062)							
EP1204845-004	Anonymous	EP074: Carbon disulfide	75-15-0	5	μg/L	<5	<5	0.0	No Limit
EP1204880-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
FP074D: Fumigants	(QC of: 2362062)								
EP1204845-004	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
	,	EP074: 1 2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	μg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	μg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	μg/L	<5	<5	0.0	No Limit
EP1204880-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	μg/L	<5	<5	0.0	No Limit
	-	EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	μg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenate	d Aliphatic Compounds	(QC Lot: 2362062)							
EP1204845-004	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	μg/L	<5	<5	0.0	No Limit
		EP074: lodomethane	74-88-4	5	μg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	μg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	μg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit

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Sub-Matrix: WATER			Γ	Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated	Aliphatic Compounds (QC	Lot: 2362062) - continued							
EP1204845-004	Anonymous	EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP1204880-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: lodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated	Aromatic Compounds (QC	C Lot: 2362062)							
EP1204845-004	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit

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Sub-Matrix: WATER			Г	Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074F: Halogenate	d Aromatic Compound	s (QC Lot: 2362062) - continued							
EP1204845-004	Anonymous	EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP1204880-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalometl	nanes (QC Lot: 236206	52)							
EP1204845-004	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP1204880-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	μg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP074H: Naphthalen	e (QC Lot: 2362062)								
EP1204845-004	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP1204880-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
EP080/071: Total Pet	roleum Hydrocarbons	(QC Lot: 2362063)							
EP1204845-004	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP1204880-001	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Red	coverable Hydrocarbor	ns - NEPM 2010 Draft (QC Lot: 2362063)							
EP1204845-004	Anonymous	EP080: C6 - C10 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP1204880-001	Anonymous	EP080: C6 - C10 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC	Lot: 2362063)								
EP1204845-004	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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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 (%)		
EP080: BTEXN (QC I	ot: 2362063) - continued										
EP1204845-004	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		
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit		
EP1204880-001	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		
		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: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLo	t: 2362062)							
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	97.2	79	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	101	74	118
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	102	79.9	116
EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	20 µg/L	102	80.3	116
	106-42-3							
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	112	80.8	117
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	103	80.6	116
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	103	78	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	99.8	77.9	120
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	101	77	121
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	97.8	74	120
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	98.9	77	117
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	99.6	78.6	119
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	97.8	76.6	121
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	104	73.8	123
EP074B: Oxygenated Compounds (QCLot: 2362062)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	95.1	67	127
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	110	62	134
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	106	74.9	122
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	116	74.6	120
EP074C: Sulfonated Compounds (QCLot: 2362062)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	102	68.4	134
EP074D: Fumigants (QCLot: 2362062)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	105	67	137
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	98.2	77.4	121
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	100	68	128
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	108	71.7	127
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	104	77.9	118
EP074E: Halogenated Aliphatic Compounds (QCLot	: 2362062)							
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	100	63	143
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	103	72.1	125
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	103	71	131
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	102	63	137
EP074: Chloroethane	75-00-3	50	μg/L	<50	100 µg/L	98.9	65	135

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCL	_ot: 2362062) - continued							
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	98.4	75	135
EP074: 1.1-Dichloroethene	75-35-4	5	μg/L	<5	10 µg/L	105	67	135
EP074: lodomethane	74-88-4	5	μg/L	<5	10 µg/L	88.9	49	111
EP074: trans-1.2-Dichloroethene	156-60-5	5	μg/L	<5	10 µg/L	101	72	128
EP074: 1.1-Dichloroethane	75-34-3	5	μg/L	<5	10 µg/L	94.7	76.1	126
EP074: cis-1.2-Dichloroethene	156-59-2	5	μg/L	<5	10 µg/L	100	80.7	118
EP074: 1.1.1-Trichloroethane	71-55-6	5	μg/L	<5	10 µg/L	102	67	131
EP074: 1.1-Dichloropropylene	563-58-6	5	μg/L	<5	10 µg/L	96.8	72	124
EP074: Carbon Tetrachloride	56-23-5	5	μg/L	<5	10 µg/L	109	69	137
EP074: 1.2-Dichloroethane	107-06-2	5	μg/L	<5	10 µg/L	92.4	75.3	124
EP074: Trichloroethene	79-01-6	5	μg/L	<5	10 µg/L	95.6	75	125
EP074: Dibromomethane	74-95-3	5	μg/L	<5	10 µg/L	110	78.8	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	μg/L	<5	10 µg/L	99.3	79.6	118
EP074: 1.3-Dichloropropane	142-28-9	5	μg/L	<5	10 µg/L	110	76	116
EP074: Tetrachloroethene	127-18-4	5	μg/L	<5	10 µg/L	106	74	122
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	μg/L	<5				
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	μg/L	<5	10 µg/L	116	39	149
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	μg/L	<5	10 µg/L	99.7	63.4	135
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	μg/L	<5	10 µg/L	102	79.6	117
EP074: 1.2.3-Trichloropropane	96-18-4	5	μg/L	<5	10 µg/L	114	66	114
EP074: Pentachloroethane	76-01-7	5	μg/L	<5	10 µg/L	101	60	138
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	μg/L	<5	10 µg/L	98.3	69.2	129
EP074: Hexachlorobutadiene	87-68-3	5	μg/L	<5	10 µg/L	109	73	129
EP074F: Halogenated Aromatic Compounds (QCI	Lot: 2362062)							
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	102	81.4	115
EP074: Bromobenzene	108-86-1	5	μg/L	<5	10 µg/L	99.2	78.6	119
EP074: 2-Chlorotoluene	95-49-8	5	μg/L	<5	10 µg/L	98.8	81.2	117
EP074: 4-Chlorotoluene	106-43-4	5	μg/L	<5	10 µg/L	100	79	117
EP074: 1.3-Dichlorobenzene	541-73-1	5	μg/L	<5	10 µg/L	98.9	78	120
EP074: 1.4-Dichlorobenzene	106-46-7	5	μg/L	<5	10 µg/L	98.1	77.4	122
EP074: 1.2-Dichlorobenzene	95-50-1	5	μg/L	<5	10 µg/L	102	81.3	116
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	μg/L	<5	10 µg/L	106	69.9	126
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	μg/L	<5	10 µg/L	109	69	125
EP074G: Trihalomethanes (QCLot: 2362062)								
EP074: Chloroform	67-66-3	5	μg/L	<5	10 µg/L	102	80.2	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	97.2	74	130
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	108	62	136
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	112	65	131
EP074H: Naphthalene (QCLot: 2362062)								

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
			Report	Spike	Spike Recovery (%)	Recovery	Limits (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP074H: Naphthalene (QCLot: 2362062) - conti	nued								
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	98.7	61	129	
EP080/071: Total Petroleum Hydrocarbons (QCI	Lot: 2362063)								
EP080: C6 - C9 Fraction		20	µg/L	<20	320 µg/L	128	74.2	142	
EP080/071: Total Petroleum Hydrocarbons (QCI	Lot: 2362240)								
EP071: C10 - C14 Fraction		50	µg/L	<50	400 µg/L	80.2	44.5	122	
EP071: C15 - C28 Fraction		100	µg/L	<100	400 µg/L	122	55.1	143	
EP071: C29 - C36 Fraction		50	µg/L	<50	400 µg/L	96.8	53.6	128	
EP080/071: Total Recoverable Hydrocarbons - N	EPM 2010 Draft (QCLot:	2362063)							
EP080: C6 - C10 Fraction		20	µg/L	<20	332.5 µg/L	130	74.2	142	
EP080/071: Total Recoverable Hydrocarbons - N	EPM 2010 Draft (QCLot:	2362240)							
EP071: >C10 - C16 Fraction		100	µg/L	<100	400 µg/L	85.9	44.5	122	
EP071: >C16 - C34 Fraction		100	µg/L	<100	600 µg/L	117	55.1	143	
EP071: >C34 - C40 Fraction		100	µg/L	<100	200 µg/L	88.4	53.6	128	
EP080: BTEXN (QCLot: 2362063)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	72.6	122	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	94.7	71.1	123	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	94.0	71.9	121	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.5	72.3	122	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	101	72.3	121	
EP080: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	114	78.8	121	



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: WATER		Matrix Spike (N		Matrix Spike (MS) Rep	NS) Report		
				Spike	Spike Recovery (%)	Recovery	Limits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074A: Monocyclic	Aromatic Hydrocarbons (QCLot: 2362062)						
EP1204845-003	Anonymous	EP074: Benzene	71-43-2	20 µg/L	95.7	82.7	115
		EP074: Toluene	108-88-3	20 µg/L	97.8	77.1	118
EP074E: Halogenated	d Aliphatic Compounds (QCLot: 2362062)						
EP1204845-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	20 µg/L	98.5	73.7	126
		EP074: Trichloroethene	79-01-6	20 µg/L	92.2	79.1	120
EP074F: Halogenated	Aromatic Compounds (QCLot: 2362062)						
EP1204845-003	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	99.9	81.4	115
EP080/071: Total Pet	roleum Hydrocarbons (QCLot: 2362063)						
EP1204845-003	Anonymous	EP080: C6 - C9 Fraction		280 µg/L	80.5	77.0	137
EP080/071: Total Rec	overable Hydrocarbons - NEPM 2010 Draft	(QCLot: 2362063)					
EP1204845-003	Anonymous	EP080: C6 - C10 Fraction		292.5 µg/L	80.5	77.0	137
EP080: BTEXN (QCL	ot: 2362063)						
EP1204845-003	Anonymous	EP080: Benzene	71-43-2	20 µg/L	95.8	77.0	122
		EP080: Toluene	108-88-3	20 µg/L	90.2	73.5	126

Environmental Division



INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EP1204883	Page	: 1 of 6
Client Contact Address	GOLDER ASSOCIATES MS KEELY MUNDLE PO BOX 1914 WEST PERTH WA 6872	Laboratory Contact Address	 Environmental Division Perth Tracy Presland 10 Hod Way Malaga WA Australia 6090
E-mail Telephone Facsimile	 kmundle@golder.com.au +61 08 9213 8249 +61 08 9427 7611 	E-mail Telephone Facsimile	 Tracy.Presland@alsglobal.com 08 9209 7604 08 9209 7600
Project Site	: 117643092 :	QC Level	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
C-O-C number Sampler Order number	: Q8150 : SV :	Date Samples Received Issue Date	: 19-JUN-2012 : 25-JUN-2012
Quote number	: EN/002/10 BQ	No. of samples received No. of samples analysed	: 2 : 2

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

Environmental Division Perth

Part of the ALS Laboratory Group

10 Hod Way Malaga WA Australia 6090 Tel. +61-8-9209 7655 Fax. +61-8-9209 7600 www.alsglobal.com

A Campbell Brothers Limited Company



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: WATER						Evaluation:	× = Holding time I	oreach ; 🗸 = Within	holding time.
Method		Sa	Sample Date	Ext	raction / Preparation			Analysis	
Container / Client Sample ID(s)				Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19-	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	1
EP074B: Oxygenated Compounds									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19.	9-JUN-2012	19-JUN-2012	03-JUL-2012	~	20-JUN-2012	03-JUL-2012	1
EP074C: Sulfonated Compounds									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19.	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	1
EP074D: Fumigants									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	~
EP074E: Halogenated Aliphatic Compounds									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	1
EP074F: Halogenated Aromatic Compounds									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19.	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	~
EP074G: Trihalomethanes									
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	1
EP074H: Naphthalene									
Amber VOC Vial - Sulfuric Acid Q8150 - 02		19	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	1
EP080/071: Total Petroleum Hydrocarbons									
Amber Glass Bottle - Unpreserved Q8150 - 01		19	9-JUN-2012	21-JUN-2012	26-JUN-2012	1	22-JUN-2012	31-JUL-2012	1
Amber VOC Vial - Sulfuric Acid Q8150 - 01,	Q8150 - 02	19.	9-JUN-2012	19-JUN-2012	03-JUL-2012	1	20-JUN-2012	03-JUL-2012	1

Page	: 3 of 6
Work Order	: EP1204883
Client	: GOLDER ASSOCIATES
Project	: 117643092



Matrix: WATER Evaluation: \star = Holding time breach ; \checkmark = 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 2010 Draft Amber Glass Bottle - Unpreserved Q8150 - 01 19-JUN-2012 21-JUN-2012 26-JUN-2012 1 22-JUN-2012 31-JUL-2012 \checkmark Amber VOC Vial - Sulfuric Acid Q8150 - 01, Q8150 - 02 03-JUL-2012 19-JUN-2012 19-JUN-2012 03-JUL-2012 1 20-JUN-2012 1 EP080: BTEXN Amber VOC Vial - Sulfuric Acid Q8150 - 01, Q8150 - 02 19-JUN-2012 19-JUN-2012 03-JUL-2012 20-JUN-2012 03-JUL-2012 1 1

Page	: 4 of 6
Work Order	: EP1204883
Client	: GOLDER ASSOCIATES
Project	: 117643092



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.

Atrix: WATER Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within sp					ot within specification ; \checkmark = 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)									
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement		
Volatile Organic Compounds	EP074	2	18	11.1	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement		
Laboratory Control Samples (LCS)									
TPH - Semivolatile Fraction	EP071	1	16	6.3	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		
Volatile Organic Compounds	EP074	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement		
Method Blanks (MB)									
TPH - Semivolatile Fraction	EP071	1	16	6.3	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		
Volatile Organic Compounds	EP074	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement		
Matrix Spikes (MS)									
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement		
Volatile Organic Compounds	EP074	1	18	5.6	5.0	✓	ALS QCS3 requirement		

Page	5 of 6
Work Order	: EP1204883
Client	: GOLDER ASSOCIATES
Project	: 117643092



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
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM
	50074		(1999) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	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. 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
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



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.

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division



SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: EP120	4883									
Client Contact Address	GOLDER ASSOCIATES MS SARAH VIEILLET PO BOX 1914 WEST PERTH WA 6872		Laboratory Contact Address	: Envii : Tracı : 10 H	ironmental Division Perth :y Presland łod Way Malaga WA Australia 6090						
E-mail Telephone Facsimile	∶svieillet@ ∶+61 08 9 ∶+61 08 9	⊉golder.com.au 213 7600 427 7611	E-mail Telephone Facsimile	: Trac : 08 92 : 08 92	y.Presland@alsglobal.com 209 7604 209 7600						
Project Order number	: 1176430 :	92	Page	: 1 of 3	3						
C-O-C number	: Q8150		Quote number	: EP20 BQ)	010GOLASSWA0243 (EN/002/10						
Site Sampler	: : SV		QC Level	: NEP QCS	M 1999 Schedule B(3) and ALS 3 requirement						
Dates											
Date Samples Received Client Requested Due Date		: 19-JUN-2012 : 26-JUN-2012	Issue Date Scheduled Reporting	g Date	: 19-JUN-2012 14:48 [:] 26-JUN-2012						
Deliverv Deta	ils										
Mode of Delivery No. of coolers/boxes Security Seal		: Carrier : 1 Medium : Intact.	Temperature No. of samples rece No. of samples anal	ived ysed	: 13.1 - Ice present : 2 : 2						

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.

Samples received in appropriately pretreated and preserved containers.

- pH analysis should be conducted within 6 hours of sampling.
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (SamplesPerth@alsenviro.com)
- Sample Disposal Aqueous (14 days), Solid (90 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 neccessary 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: WATER Laboratory sample Client sampling Client sample ID ID date / time	WATER - EP033 C1 - C4 Gases in Water	WATER - EP074 (water) Volatile Organic Compounds	WATER - W-09 TPH/VOC	WATER - W-18 TPH(C6 - C9)/BTEX
EP1204883-001 19-JUN-2012 11:30 Q8150 - 01	1		1	
EP1204883-002 19-JUN-2012 11:30 Q8150 - 02		✓		✓

Proactive Holding Time Report

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



Requested Deliverables

ACCOUNTS PAYABLE (WA)		
- A4 - AU Tax Invoice (INV)	Email	kaye.davies@alsglobal.com
MR PAUL HAMILTON		
 *AU Certificate of Analysis - NATA (COA) 	Email	phamilton@golder.com.au
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	phamilton@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	phamilton@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	phamilton@golder.com.au
- A4 - AU Tax Invoice (INV)	Email	phamilton@golder.com.au
 Chain of Custody (CoC) (COC) 	Email	phamilton@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	phamilton@golder.com.au
 EDI Format - EQUIS V5 Generic (EQUIS_V5) 	Email	phamilton@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	phamilton@golder.com.au
- EDI Format - XTab(XTAB)	Email	phamilton@golder.com.au
MS KEELY MUNDLE		
 *AU Certificate of Analysis - NATA (COA) 	Email	kmundle@golder.com.au
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	kmundle@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	kmundle@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT (SRN) 	Email	kmundle@golder.com.au
- A4 - AU Tax Invoice (INV)	Email	kmundle@golder.com.au
 Chain of Custody (CoC) (COC) 	Email	kmundle@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	kmundle@golder.com.au
 EDI Format - EQUIS V5 Generic (EQUIS_V5) 	Email	kmundle@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kmundle@golder.com.au
- EDI Format - XTab(XTAB)	Email	kmundle@golder.com.au
MS SARAH VIEILLET		
 *AU Certificate of Analysis - NATA 	Email	svieillet@golder.com.au
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) 	Email	svieillet@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA 	Email	svieillet@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT 	Email	svieillet@golder.com.au
- A4 - AU Tax Invoice	Email	svieillet@golder.com.au
 Chain of Custody (CoC) 	Email	svieillet@golder.com.au
- EDI Format - ENMRG	Email	svieillet@golder.com.au
- EDI Format - EQUIS V5 Generic	Email	svieillet@golder.com.au
- EDI Format - ESDAT	Email	svieillet@golder.com.au
- EDI Format - XTab	Email	svieillet@golder.com.au

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ANALYTICAL CHEMISTRY & TESTING SERVICES

(ALS)

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	EP1204978	Page	: 1 of 6
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Perth
Contact	: MS KEELY MUNDLE	Contact	: Tracy Presland
Address	: PO BOX 1914	Address	: 10 Hod Way Malaga WA Australia 6090
	WEST PERTH WA 6872		
E-mail	: kmundle@golder.com.au	E-mail	: Tracy.Presland@alsglobal.com
Telephone	: +61 08 9213 8249	Telephone	: 08 9209 7604
Facsimile	: +61 08 9427 7611	Facsimile	: 08 9209 7600
Project	: 117643092	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	:		
C-O-C number	: 9503	Date Samples Received	: 21-JUN-2012
Sampler	:	Issue Date	: 28-JUN-2012
Site	:		
		No. of samples received	: 3
Quote number	: EN/002/10 BQ	No. of samples analysed	: 3

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:

NATA Accredited Laboratory 825

Accredited for compliance with

ISO/IEC 17025.

- General Comments
- Analytical Results
- Surrogate Control Limits



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	
Agnes Szilagyi	Senior Organic Chemist	Perth Organics	
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics	
Chas Tucker	Inorganic Chemist	Perth Inorganics	
Cicelia Bartels	Metals Instrument Chemist	Perth Inorganics	
Rassem Ayoubi	Senior Organic Chemist	Perth Organics	

Environmental Division Perth Part of the ALS Laboratory Group 10 Hod Way Malaga WA Australia 6090 Tel. +61-8-9209 7655 Fax. +61-8-9209 7600 www.alsglobal.com A Campbell Brothers Limited Company



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



Sub-Matrix: WATER		Client sample ID		Q9503-01	Q9503-02	Q9503-03 TRIP BLANK	
	CI	Client sampling date / time		[21-JUN-2012]	[21-JUN-2012]	[21-JUN-2012]	
Compound	CAS Number	LOR	Unit	EP1204978-001	EP1204978-002	EP1204978-003	
EG020T: Total Metals by ICP-MS							
Aluminium	7429-90-5	0.01	mg/L	2.31			
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	0.002			
Lead	7439-92-1	0.001	mg/L	0.002			
Manganese	7439-96-5	0.001	mg/L	0.100			
Nickel	7440-02-0	0.001	mg/L	<0.001			
Zinc	7440-66-6	0.005	mg/L	0.020			
Iron	7439-89-6	0.05	mg/L	1.59			
EG035T: Total Recoverable Mercury	by FIMS						
Mercury	7439-97-6	0.0001	mg/L	<0.0001			
EK057G: Nitrite as N by Discrete An	alyser						
Nitrite as N		0.01	mg/L	0.01			
EK058G: Nitrate as N by Discrete Ar	nalyser						
Nitrate as N	14797-55-8	0.01	mg/L	0.16			
EK059G: Nitrite plus Nitrate as N (No	Ox) by Discrete Ana	lyser					
Nitrite + Nitrate as N		0.01	mg/L	0.17			
EP074A: Monocyclic Aromatic Hydro	ocarbons						
Benzene	71-43-2	1	µg/L	<1		<1	
Toluene	108-88-3	2	µg/L	<2		<2	
Ethylbenzene	100-41-4	2	µg/L	<2		<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2		<2	
Styrene	100-42-5	5	µg/L	<5		<5	
ortho-Xylene	95-47-6	2	µg/L	<2		<2	
Isopropylbenzene	98-82-8	5	µg/L	<5		<5	
n-Propylbenzene	103-65-1	5	µg/L	<5		<5	
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5		<5	
sec-Butylbenzene	135-98-8	5	µg/L	<5		<5	
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5		<5	
tert-Butylbenzene	98-06-6	5	µg/L	<5		<5	
p-Isopropyltoluene	99-87-6	5	µg/L	<5		<5	
n-Butylbenzene	104-51-8	5	µg/L	<5		<5	
EP074B: Oxygenated Compounds							
Vinyl Acetate	108-05-4	50	µg/L	<50		<50	
2-Butanone (MEK)	78-93-3	50	µg/L	<50		<50	
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50		<50	



Sub-Matrix: WATER	Client sample ID		Q9503-01	Q9503-02	Q9503-03 TRIP BLANK			
	Cli	ent samplii	ng date / time	[21-JUN-2012]	[21-JUN-2012]	[21-JUN-2012]		
Compound	CAS Number	LOR	Unit	EP1204978-001	EP1204978-002	EP1204978-003		
EP074B: Oxygenated Compounds - Continu	ued							
2-Hexanone (MBK)	591-78-6	50	µg/L	<50		<50		
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5		<5		
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	μg/L	<5		<5		
1.2-Dichloropropane	78-87-5	5	µg/L	<5		<5		
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5		<5		
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5		<5		
1.2-Dibromoethane (EDB)	106-93-4	5	μg/L	<5		<5		
EP074E: Halogenated Aliphatic Compound	ds							
Dichlorodifluoromethane	75-71-8	50	µg/L	<50		<50		
Chloromethane	74-87-3	50	µg/L	<50		<50		
Vinyl chloride	75-01-4	50	µg/L	<50		<50		
Bromomethane	74-83-9	50	µg/L	<50		<50		
Chloroethane	75-00-3	50	µg/L	<50		<50		
Trichlorofluoromethane	75-69-4	50	µg/L	<50		<50		
1.1-Dichloroethene	75-35-4	5	µg/L	<5		<5		
lodomethane	74-88-4	5	µg/L	<5		<5		
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5		<5		
1.1-Dichloroethane	75-34-3	5	µg/L	<5		<5		
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5		<5		
1.1.1-I richloroethane	71-55-6	5	µg/L	<5		<5		
1.1-Dichloropropylene	563-58-6	5	µg/L	<0		<0		
Carbon Tetrachloride	56-23-5	5	µg/L	<0		<0		
1.2-Dichloroethane	107-06-2	5	µg/L	<5		<5		
Dibromomethane	79-01-6	5	µg/L	<5		<5		
1 1 2-Trichloroethane	74-95-3	5	μg/L	<5		<5		
1.3-Dichloropropage	142.29.0	5	µg/L	<5		<5		
Tetrachloroethene	142-20-9	5	µg/L	<5		<5		
1 1 1 2-Tetrachloroethane	630, 20, 6	5	µg/L	<5		<5		
trans-1 4-Dichloro-2-butene	110-57-6	5	μg/L μg/l	<5		<5		
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5		<5		
1.1.2.2-Tetrachloroethane	79-34-5	5	μq/L	<5		<5		
1.2.3-Trichloropropane	96-18-4	5	μg/L	<5		<5		
Pentachloroethane	76-01-7	5	μg/L	<5		<5		
1.2-Dibromo-3-chloropropane	96-12-8	5	μg/L	<5		<5		



Sub-Matrix: WATER		Clie	ent sample ID	Q9503-01	Q9503-02	Q9503-03		
						TRIP BLANK		
	Cl	ient sampli	ng date / time	[21-JUN-2012]	[21-JUN-2012]	[21-JUN-2012]		
Compound	CAS Number	LOR	Unit	EP1204978-001	EP1204978-002	EP1204978-003		
EP074E: Halogenated Aliphatic Compoun	ds - Continued							
Hexachlorobutadiene	87-68-3	5	µg/L	<5		<5		
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5		<5		
Bromobenzene	108-86-1	5	μg/L	<5		<5		
2-Chlorotoluene	95-49-8	5	µg/L	<5		<5		
4-Chlorotoluene	106-43-4	5	µg/L	<5		<5		
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5		<5		
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5		<5		
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5		<5		
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5		<5		
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5		<5		
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5		<5		
Bromodichloromethane	75-27-4	5	µg/L	<5		<5		
Dibromochloromethane	124-48-1	5	µg/L	<5		<5		
Bromoform	75-25-2	5	µg/L	<5		<5		
EP074H: Naphthalene								
Naphthalene	91-20-3	7	µg/L	<7		<7		
EP093: Brominated Volatile Organic Com	pounds							
Vinyl bromide	593-60-2	0.10	μg/L	<0.10	<0.10			
Dibromomethane	74-95-3	0.10	µg/L	<0.10	<0.10			
cis-1.2-Dibromoethene	540-49-8	0.10	µg/L	<0.10	<0.10			
trans-1.2-Dibromoethene	540-49-8	0.10	µg/L	<0.10	<0.10			
1.2-Dibromoethene (total)	540-49-8	0.10	µg/L	<0.10	<0.10			
Bromoform	75-25-2	0.10	µg/L	<0.10	<0.10			
Tribromoethene	598-16-3	0.10	µg/L	<0.10	<0.10			
1.1.2.2-Tetrabromoethane	79-27-6	1.0	µg/L	<1.0	<1.0			
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	93.9		91.6		
Toluene-D8	2037-26-5	0.1	%	102		104		
4-Bromofluorobenzene	460-00-4	0.1	%	97.0		95.7		
EP093S: Brominated VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	113	106			
Toluene-D8	2037-26-5	0.1	%	100	96.0			
4-Bromofluorobenzene	460-00-4	0.1	%	95.5	96.2			

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ALS)

Surrogate Control Limits

Sub-Matrix: WATER		Recover	y Limits (%)
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	62.3	133.9
Toluene-D8	2037-26-5	74.5	124.3
4-Bromofluorobenzene	460-00-4	63.9	118.5
EP093S: Brominated VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	70.0	130
Toluene-D8	2037-26-5	70.0	130
4-Bromofluorobenzene	460-00-4	70.0	130

Environmental Division



QUALITY CONTROL REPORT

Work Order	EP1204978	Page	: 1 of 9
Client	GOLDER ASSOCIATES	Laboratory	: Environmental Division Perth
Contact	: MS KEELY MUNDLE	Contact	: Tracy Presland
Address	: PO BOX 1914	Address	: 10 Hod Way Malaga WA Australia 6090
	WEST PERTH WA 6872		
E-mail	: kmundle@golder.com.au	E-mail	: Tracy.Presland@alsglobal.com
Telephone	: +61 08 9213 8249	Telephone	: 08 9209 7604
Facsimile	: +61 08 9427 7611	Facsimile	: 08 9209 7600
Project	: 117643092	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	:		
C-O-C number	: 9503	Date Samples Received	: 21-JUN-2012
Sampler	:	Issue Date	: 28-JUN-2012
Order number	:		
		No. of samples received	: 3
Quote number	: EN/002/10 BQ	No. of samples analysed	: 3

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

	NATA Accredited Laboratory 825 Accredited for compliance with	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.						
WORLD RECOGNISED ACCREDITATION	ISO/IEC 17025.	Signatories Position		Accreditation Category				
		Agnes Szilagyi	Senior Organic Chemist	Perth Organics				
		Canhuang Ke	Metals Instrument Chemist	Perth Inorganics				
		Chas Tucker	Inorganic Chemist	Perth Inorganics				
		Cicelia Bartels	Metals Instrument Chemist	Perth Inorganics				
		Rassem Ayoubi	Senior Organic Chemist	Perth Organics				



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
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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: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	mple ID Client sample ID Method: Compound		CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metal	s by ICP-MS (QC Lot:	: 2370812)							
EP1204948-001	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	0.002	0.002	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.027	0.027	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.038	0.038	0.0	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.156	0.166	6.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.012	0.011	0.0	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.017	0.016	0.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	23.6	22.4	4.9	0% - 20%
		EG020A-T: Iron	7439-89-6	0.05	mg/L	10.7	10.8	0.8	0% - 20%
EG035T: Total Reco	verable Mercury by F	IMS (QC Lot: 2370891)							
EP1204978-001	Q9503-01	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP1205038-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK057G: Nitrite as I	N by Discrete Analyse	r (QC Lot: 2366399)							
EP1204942-021	Anonymous	EK057G: Nitrite as N		0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP1204949-005	Anonymous	EK057G: Nitrite as N		0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plu	s Nitrate as N (NOx) b	y Discrete Analyser (QC Lot: 2366826)							
EP1204942-021	Anonymous	EK059G: Nitrite + Nitrate as N		0.01	mg/L	0.09	0.09	0.0	No Limit
EP1204949-005	Anonymous	EK059G: Nitrite + Nitrate as N		0.01	mg/L	7.63	7.57	0.8	0% - 20%
EP074A: Monocyclic	Aromatic Hydrocarb	ons (QC Lot: 2368569)							
EP1204978-001	Q9503-01	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenate	d Compounds (QC Lo	ot: 2368569)							

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			_						
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 (%)
EP074B: Oxygenated	Compounds (QC Lot	: 2368569) - continued							
EP1204978-001	Q9503-01	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated	Compounds (QC Lot:)	2368569)							
EP1204978-001	Q9503-01	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants	(QC Lot: 2368569)								
EP1204978-001	Q9503-01	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated	Aliphatic Compounds	s (QC L ot: 2368569)							
EP1204978-001	Q9503-01	EP074: 1 1-Dichloroethene	75-35-4	5	µq/L	<5	<5	0.0	No Limit
		EP074: lodomethane	74-88-4	5	ua/L	<5	<5	0.0	No Limit
		EP074: trans-1 2-Dichloroethene	156-60-5	5	ua/L	<5	<5	0.0	No Limit
		EP074: 1 1-Dichloroethane	75-34-3	5	ua/L	<5	<5	0.0	No Limit
		EP074: cis-1 2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1 1 1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1 1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1 2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	ua/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	ua/L	<5	<5	0.0	No Limit
		EP074: 1 1 2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1 1 1 2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1 4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1 4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	ua/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	μg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	μg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	μg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	μg/L	<50	<50	0.0	No Limit
		EP074: Vinvl chloride	75-01-4	50	μα/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	μg/L	<50	<50	0.0	No Limit

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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 (%)		
EP074E: Halogenate	ed Aliphatic Compound	ds (QC Lot: 2368569) - continued									
EP1204978-001	Q9503-01	EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit		
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
EP074F: Halogenate	ed Aromatic Compound	ds (QC Lot: 2368569)									
EP1204978-001	4978-001 Q9503-01 EP074: Chlorobenzene		108-90-7	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit		
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit		
EP074G: Trihalomet	hanes (QC Lot: 23685	69)									
EP1204978-001	Q9503-01	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit		
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit		
EP074H: Naphthale	ne (QC Lot: 2368569)										
EP1204978-001	Q9503-01	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit		
EP093: Brominated	Volatile Organic Comp	ounds (QC Lot: 2368570)									
EP1204978-001	Q9503-01	EP093: Vinyl bromide	593-60-2	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: Dibromomethane	74-95-3	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: cis-1.2-Dibromoethene	540-49-8	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: trans-1.2-Dibromoethene	540-49-8	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: 1.2-Dibromoethene (total)	540-49-8	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: Bromoform	75-25-2	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: Tribromoethene	598-16-3	0.10	µg/L	<0.10	<0.10	0.0	No Limit		
		EP093: 1.1.2.2-Tetrabromoethane	79-27-6	1.0	µg/L	<1.0	<1.0	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: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Spike Recovery (%) Recov		Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 237081	12)							
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	78	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.4	77	109
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.9	78	108
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	80	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	103	81	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	80	112
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	80	112
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.7	74	108
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	103	75	115
EG035T: Total Recoverable Mercury by FIMS(Q	CLot: 2370891)							
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	97.8	82.3	118
EK057G: Nitrite as N by Discrete Analyser (QCL	.ot: 2366399)							
EK057G: Nitrite as N		0.01	mg/L	<0.01	0.5 mg/L	98.6	86	124
EK059G: Nitrite plus Nitrate as N (NOx) by Disc	rete Analyser (QCLot: 23	66826)						
EK059G: Nitrite + Nitrate as N		0.01	mg/L	<0.01	0.5 mg/L	91.3	75.6	124
EP074A: Monocyclic Aromatic Hydrocarbons(Q	CLot: 2368569)							
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.7	79	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	74	118
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	79.9	116
EP074: meta- & para-Xylene	108-38-3	2	µg/L	<2	20 µg/L	100	80.3	116
	106-42-3							
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	95.2	80.8	117
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	97.3	80.6	116
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	104	78	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	99.6	77.9	120
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	101	77	121
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	104	74	120
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	99.0	77	117
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	106	78.6	119
EP074: p-lsopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	104	76.6	121
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	104	73.8	123
EP074B: Oxygenated Compounds (QCLot: 2368	569)							
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	105	67	127
EP074: 2-Butanone (MEK)	78-93-3	50	μg/L	<50	100 µg/L	80.4	62	134

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP074B: Oxygenated Compounds (QCLot: 2368569)) - continued							
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	88.7	74.9	122
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	88.4	74.6	120
EP074C: Sulfonated Compounds (QCLot: 2368569)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	86.1	68.4	134
EP074D: Fumigants (QCLot: 2368569)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	102	67	137
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	95.1	77.4	121
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	99.2	68	128
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	97.1	71.7	127
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	95.0	77.9	118
EP074E: Halogenated Aliphatic Compounds (QCLot	t: 2368569)							
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	100	63	143
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	98.7	72.1	125
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	98.8	71	131
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	103	63	137
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	101	65	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	99.7	75	135
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	100	67	135
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	92.8	49	111
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	85.2	72	128
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	84.7	76.1	126
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	86.3	80.7	118
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	98.7	67	131
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	105	72	124
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	98.0	69	137
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	94.1	75.3	124
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	99.1	75	125
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	95.7	78.8	118
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	94.0	79.6	118
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	105	76	116
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	105	74	122
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5				
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	102	39	149
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	84.6	63.4	135
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	84.6	79.6	117
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	90.2	66	114
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	99.1	60	138
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	96.1	69.2	129
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	108	73	129

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				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
Sub-Matrix. WATER				Report	Spike	Spike Recovery (%)	Recoverv	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP074F: Halogenated Aromatic Compounds	(QCLot: 2368569)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	101	81.4	115	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	101	78.6	119	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	103	81.2	117	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	100	79	117	
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	95.8	78	120	
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	105	77.4	122	
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	95.5	81.3	116	
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	106	69.9	126	
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	104	69	125	
EP074G: Trihalomethanes (QCLot: 2368569)									
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	93.8	80.2	120	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	96.0	74	130	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	96.4	62	136	
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	97.4	65	131	
EP074H: Naphthalene (QCLot: 2368569)									
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	80.6	61	129	
EP093: Brominated Volatile Organic Compour	nds (QCLot: 2368570)								
EP093: Vinyl bromide	593-60-2	0.1	µg/L	<0.10	20 µg/L	107	84.6	123	
EP093: Dibromomethane	74-95-3	0.1	µg/L	<0.10	20 µg/L	112	84.4	118	
EP093: cis-1.2-Dibromoethene	540-49-8	0.1	µg/L	<0.10					
EP093: trans-1.2-Dibromoethene	540-49-8	0.1	µg/L	<0.10					
EP093: 1.2-Dibromoethene (total)	540-49-8	0.1	µg/L	<0.10	20 µg/L	104	81.7	120	
EP093: Bromoform	75-25-2	0.1	µg/L	<0.10	20 µg/L	114	81.3	121	
EP093: Tribromoethene	598-16-3	0.1	µg/L	<0.10	20 µg/L	109	84.6	115	
EP093: 1.1.2.2-Tetrabromoethane	79-27-6	1	µg/L	<1.0	20 µg/L	108	75.8	132	



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: WATER			Matrix Spike (MS) Report				
				Spike	Spike Recovery (%)	Recovery	Limits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metal	s by ICP-MS (QCLot: 2370812)						
EP1204948-002	Matrix: WATER vratory sample ID Client sample ID 20T: Total Metals by ICP-MS (QCLot: 2370812) 204948-002 Anonymous 35T: Total Recoverable Mercury by FIMS (QCLot: 23706 205014-001 Anonymous 57G: Nitrite as N by Discrete Analyser (QCLot: 2366399 204942-021 Anonymous 59G: Nitrite plus Nitrate as N (NOx) by Discrete Analyse 204942-021 Anonymous 74A: Monocyclic Aromatic Hydrocarbons (QCLot: 23683 204978-003 Q9503-03 TRIP BLANK 74E: Halogenated Aliphatic Compounds (QCLot: 23685 204978-003 Q9503-03 TRIP BLANK 74F: Halogenated Aromatic Compounds (QCLot: 23685 204978-003 Q9503-03 TRIP BLANK 93: Brominated Volatile Organic Compounds (QCLot: 2 204978-002 Q9503-02	EG020A-T: Arsenic	7440-38-2	1.00 mg/L	104	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.8	70	130
		EG020A-T: Chromium	7440-47-3	1.00 mg/L	74.0	70	130
		EG020A-T: Lead	7439-92-1	1.00 mg/L	95.2	70	130
		EG020A-T: Manganese	7439-96-5	1.00 mg/L	72.2	70	130
		EG020A-T: Nickel	7440-02-0	1.00 mg/L	98.1	70	130
		EG020A-T: Zinc	7440-66-6	1.00 mg/L	93.1	70	130
EG035T: Total Reco	overable Mercury by FIMS (QCLot	: 2370891)					
EP1205014-001	Anonymous	EG035T: Mercury	7439-97-6	0.0100 mg/L	78.0	70	130
EK057G: Nitrite as I	N by Discrete Analyser (QCLot: 23	366399)					
EP1204942-021	Anonymous	EK057G: Nitrite as N		0.6 mg/L	93.7	70	130
EK059G: Nitrite plus	s Nitrate as N (NOx) by Discrete A	Analyser (QCLot: 2366826)					
EP1204942-021	Anonymous	EK059G: Nitrite + Nitrate as N		0.5 mg/L	120	70	130
EP074A: Monocyclic	Aromatic Hydrocarbons (QCLot	: 2368569)					
EP1204978-003	Q9503-03 TRIP BLANK	EP074: Benzene	71-43-2	20 µg/L	83.0	82.7	115
		EP074: Toluene	108-88-3	20 µg/L	85.1	77.1	118
EP074E: Halogenate	d Aliphatic Compounds (QCLot: :	2368569)					
EP1204978-003	Q9503-03 TRIP BLANK	EP074: 1.1-Dichloroethene	75-35-4	20 µg/L	93.3	73.7	126
		EP074: Trichloroethene	79-01-6	20 µg/L	87.0	79.1	120
EP074F: Halogenate	d Aromatic Compounds (QCLot:	2368569)					
EP1204978-003	Q9503-03 TRIP BLANK	EP074: Chlorobenzene	108-90-7	20 µg/L	86.8	81.4	115
EP093: Brominated	Volatile Organic Compounds (QC	Lot: 2368570)					
EP1204978-002	Q9503-02	EP093: Vinyl bromide	593-60-2	20 µg/L	101	84.6	123
		EP093: Dibromomethane	74-95-3	20 µg/L	90.6	84.4	118
		EP093: 1.2-Dibromoethene (total)	540-49-8	20 µg/L	103	81.7	120
		EP093: Bromoform	75-25-2	20 µg/L	110	81.3	121
		EP093: Tribromoethene	598-16-3	20 µg/L	106	84.6	115
		EP093: 1.1.2.2-Tetrabromoethane	79-27-6	20 µg/L	90.0	75.8	132

Environmental Division



INTERPRETIVE QUALITY CONTROL REPORT

Work Order	EP1204978	Page	: 1 of 6
Client Contact Address	GOLDER ASSOCIATES MS KEELY MUNDLE PO BOX 1914 WEST PERTH WA 6872	Laboratory Contact Address	 Environmental Division Perth Tracy Presland 10 Hod Way Malaga WA Australia 6090
E-mail Telephone Facsimile	 kmundle@golder.com.au +61 08 9213 8249 +61 08 9427 7611 	E-mail Telephone Facsimile	 Tracy.Presland@alsglobal.com 08 9209 7604 08 9209 7600
Project Site	: 117643092 :	QC Level	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
C-O-C number Sampler Order number	: 9503 : :	Date Samples Received Issue Date	21-JUN-2012 28-JUN-2012
Quote number	: EN/002/10 BQ	No. of samples received No. of samples analysed	: 3 : 3

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

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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: WATER				Evaluation	× = Holding time	breach ; 🗸 = Withir	n holding time.
Method	Sample Date	Ex	traction / 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 Plastic Bottle - Unfiltered; Lab-acidified Q9503-01	21-JUN-2012	26-JUN-2012	18-DEC-2012	1	26-JUN-2012	18-DEC-2012	1
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified Q9503-01	21-JUN-2012				26-JUN-2012	19-JUL-2012	4
EK057G: Nitrite as N by Discrete Analyser							
Amber Glass Bottle - Unpreserved Q9503-01	21-JUN-2012		23-JUN-2012		22-JUN-2012	23-JUN-2012	4
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Amber Glass Bottle - Unpreserved Q9503-01	21-JUN-2012		23-JUN-2012		21-JUN-2012	23-JUN-2012	1
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid Q9503-01	21-JUN-2012	21-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	1
Amber VOC Vial - Sulfuric Acid Q9503-03 - TRIP BLANK	21-JUN-2012	22-JUN-2012	05-JUL-2012	~	25-JUN-2012	05-JUL-2012	1
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid Q9503-01	21-JUN-2012	21-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	√
Amber VOC Vial - Sulfuric Acid Q9503-03 - TRIP BLANK	21-JUN-2012	22-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	1
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid Q9503-01	21-JUN-2012	21-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	4
Amber VOC Vial - Sulfuric Acid Q9503-03 - TRIP BLANK	21-JUN-2012	22-JUN-2012	05-JUL-2012	~	25-JUN-2012	05-JUL-2012	1
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid Q9503-01	21-JUN-2012	21-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	1
Amber VOC Vial - Sulfuric Acid Q9503-03 - TRIP BLANK	21-JUN-2012	22-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	1

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				Evaluation:	Holding time	breach ; 🗸 = Withir	n holding time.
	Sample Date	Ex	traction / Preparation			Analysis	
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
	21-JUN-2012	21-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	1
	21-JUN-2012	22-JUN-2012	05-JUL-2012	1	25-JUN-2012	05-JUL-2012	✓ √
	21-JUN-2012	21-JUN-2012	05-JUL-2012	<u>√</u>	25-JUN-2012	05-JUL-2012	-
	21-JUN-2012	22-JUN-2012	05-JUL-2012	<u> </u>	25-JUN-2012	05-JUL-2012	1
	21-JUN-2012	21-JUN-2012	05-JUL-2012	<u> </u>	25-JUN-2012	05-JUL-2012	✓ ✓
	21-JUN-2012	22-JUN-2012	05-JUL-2012	<u> </u>	25-JUN-2012	05-JUL-2012	1
	21-JUN-2012	21-JUN-2012	05-JUL-2012	√	25-JUN-2012	05-JUL-2012	1
	21-JUN-2012	22-JUN-2012	05-JUL-2012	<u>√</u>	25-JUN-2012	05-JUL-2012	 ✓
Q9503-02	21-JUN-2012	21-JUN-2012	22-JUN-2012	1	21-JUN-2012	22-JUN-2012	✓ ✓
	Q9503-02	Sample Date 21-JUN-2012 21-JUN-2012	Sample Date Ex Date extracted Date extracted 21-JUN-2012 21-JUN-2012 21-JUN-2012 21-JUN-2012	Sample Date Extraction / Preparation Date extracted Due for extraction 21-JUN-2012 21-JUN-2012 05-JUL-2012 Q9503-02 21-JUN-2012 22-JUN-2012	Sample Date Extraction / Preparation Date extracted Due for extraction Evaluation 21-JUN-2012 21-JUN-2012 05-JUL-2012 ✓ 21-JUN-2012 21-JUN-2012 22-JUN-2012 ✓ Q9503-02 21-JUN-2012 21-JUN-2012<	Sample Date Extraction / Preparation Evaluation: * = Holding time / Date extracted Date extracted Date extraction Evaluation Date enalysed 21-JUN-2012 21-JUN-2012 Date extraction Evaluation Evaluation Date enalysed 21-JUN-2012 21-JUN-2012 05-JUL-2012 ✓ 25-JUN-2012 Q9503-02 21-JUN-2012 21-JUN-2012 22-JUN-2012 ✓	Sample Date Extraction / Preparation Analysis Date extracted Due for extraction Due tor extraction Date extracted Date extractexted Date extracted Date extrac

Page	: 4 of 6
Work Order	: EP1204978
Client	: GOLDER ASSOCIATES
Project	: 117643092



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: WATER				Evaluation	n: × = Quality Cor	ntrol frequency r	to twithin specification ; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type		С	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Brominated Volatile Organic Compounds (BVOC)	EP093	1	4	25.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	2	17	11.8	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-MS - Suite A	EG020A-T	1	5	20.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	50.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Brominated Volatile Organic Compounds (BVOC)	EP093	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	17	5.9	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-MS - Suite A	EG020A-T	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Brominated Volatile Organic Compounds (BVOC)	EP093	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	17	5.9	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-MS - Suite A	EG020A-T	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Brominated Volatile Organic Compounds (BVOC)	EP093	1	4	25.0	5.0	✓	ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	17	5.9	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	~	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.0	5.0	✓	ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	2	50.0	5.0	1	ALS QCS3 requirement

Page	5 of 6
Work Order	: EP1204978
Client	: GOLDER ASSOCIATES
Project	: 117643092



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
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.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite as N by Discrete Analyser	EK057G	WATER	APHA 21st ed., 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrate as N by Discrete Analyser	EK058G	WATER	APHA 21st ed., 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Brominated Volatile Organic Compounds (BVOC)	EP093	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. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
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)
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



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.

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division



SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: EP1204	978			
Client Contact Address	GOLDER MS SARA PO BOX WEST PE	ASSOCIATES H VIEILLET I914 RTH WA 6872	Laboratory Contact Address	 Environmental Division Perth Tracy Presland 10 Hod Way Malaga WA Australia 6090 	
E-mail Telephone Facsimile	i svieillet@g i +61 08 92 i +61 08 94	golder.com.au 13 7600 27 7611	E-mail Telephone Facsimile	 Tracy.Presland@alsglobal.com 08 9209 7604 08 9209 7600 	
Project Order number	: 11764309 :	2	Page	: 1 of 2	
C-O-C number	: 9503		Quote number	: EP2010GOLASSWA0243 (EN/002/10 BQ)	
Sampler	:		QC Level	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	3
Dates					
Date Samples Receive Client Requested Due	ed Date	: 21-JUN-2012 : 28-JUN-2012	Issue Date Scheduled Reporting	: 22-JUN-2012 15:46 g Date 28-JUN-2012	
Delivery Details Mode of Delivery No. of coolers/boxes Security Seal	S	: Carrier : 1 Small Foam : Intact.	Temperature No. of samples recei No. of samples analy	: 3.1 - Ice present eived : 3 lysed : 3	

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 see scanned COC for sample discrepencies: extra samples , samples not received etc.

Samples received in appropriately pretreated and preserved containers.

- pH analysis should be conducted within 6 hours of sampling.
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (SamplesPerth@alsenviro.com)
- Sample Disposal Aqueous (14 days), Solid (90 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.

: Q9503-03 - TRIP BLANK EP1204978-003 : [21-JUN-2012]

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary 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: WATER

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - E Total Reco	WATER - E Total Merci	WATER - E Nitrate as N	WATER - E Volatile Or	WATER - E Brominated
EP1204978-001	[21-JUN-2012]	Q9503-01	✓	✓	✓	✓	✓
EP1204978-002	[21-JUN-2012]	Q9503-02					✓
EP1204978-003	[21-JUN-2012]	Q9503-03 TRIP BLANK				✓	

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/erable Metals by ICPN

G020T

by FIMS

Email

Email

Email

Fmail

Email

Fmail

Email

G035T ≧ by Discrete Analyser

K058G

anic Compounds

P074 (water)

Proactive Holding Time Report

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

Requested Deliverables

MS KEELY MUNDLE

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN)
- A4 AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format ENMRG (ENMRG)
- EDI Format EQUIS V5 Generic (EQUIS_V5)
- EDI Format ESDAT (ESDAT)
- EDI Format XTab (XTAB)

MS SARAH VIEILLET

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN)
- A4 AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format ENMRG (ENMRG)
- EDI Format EQUIS V5 Generic (EQUIS_V5)
- EDI Format ESDAT (ESDAT)
- EDI Format XTab (XTAB)

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svieillet@golder.com.au

svieillet@golder.com.au

Volatile Organic Compounds

P093 - BVOC

	CHAIN OF CUSTO	DY RECOR	D/ANALY	'SIS	REQU	EST		Q	95	03	pageof
Golder	Project Number: 1176	13092			Labora	atory Nan	^{ne:} A	21			
Associates 1 Havelock Street West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 9213	7611 Golder Contact: Keely Mundle	Golder Er	nail Address: And (c. @golder	r.com.au	Addres Teleph	ss: one/Fax: 2 <i>0</i> 4	M0	d wa	M PConta	Ma act:	leiza
Address where reports should be sent to	Sarah Vieille	+ SVI	eillet wigdo	stelly.	conade	an.	Analys	ses Requir	ed		
PO Box 1914 O West Perth, WA 6872 - Telephone (61 8) 9213 7600 - Fax (61 8) 9213 7611 - Sample Control - Number (SCN -	ther <u>+ 043451134</u> hone Fax Sample Date Matrix (over) (D/M/Y)		mber of Containers	G/NAH, Chlorinated	(& benzene) ominated VOG	itak as N	3, AL, AS CO, Cr.	zu uz		SH	Remarks
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- 07						Ei	P12	0497	78		
- 09 - 10 - 11						Telepho		8.0200	7955		
- 12						l. r		1	/000		
Sampler's Stonature	Relipquished by: Signature	Company (Islder	Date 21/6/1	2	Time		Received	l by: Signa	ture	Con A	npany LSE
Sample Storage (°C) CCLU TVC	Relinquished by: Signature	Company	Date		Time		Received	l by: Signa	ture	Con	npany:
Comments:	Method of Shipment:	Waybill No.		Rece	eived for La	b by: Joney		Date	21/6		Time 14;06
ξ	Shipped by:	Shipment Condition Seal intact:	i:	Tem 3 ·	p (°C) C	ooler ope	ened by:	Date			Time

cael

WHITE: Golder Copy YELLOW: Lab Copy PINK; Lab Returns with Final Report

1 Anna Star





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

То:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	13/06/2012
Email	svieillet@golder.com.au	Ref:	M121159

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No.:	117643092
Our Reference Number:	M121159
Date Received:	13-Jun-2012
Estimated date of report:	20-Jun-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage - A

- All aqueous samples are stored for two weeks after reporting.
- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

Melbourne Tel: +613 9874 1988 Fax: +613 9874 1933 Sydney Tel: +612 9959 2351 Fax: +612 8212 5889 Adelaide Tel: +618 8377 4444 Fax: +618 8377 4399 Brisbane Tel: +617 3899 2311 Fax: +617 3899 2322

Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com

Form - 009

Date of Issue 23/05/12





A.B.N. 540 864 910 09 4 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

19-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121159

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Four samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

13-Jun-2012

13-Jun-2012

RESULTS:

Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Report N°: M121159

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012013973	2012013974	2012013975	2012013977	2012013978
	Client ID	8146-01	8146-02	8146-03	8146-01	Method
Analyte Name	PQL				Duplicate	Blank
C6-C9	0.01	nd	nd	nd	nd	nd
C10-C14	0.01	nd	nd	nd	nd	nd
C15-C28	0.05	nd	nd	nd	nd	nd
C29-C36	0.05	nd	nd	nd	nd	nd
Total C6-C36	0.05	nd	nd	nd	nd	nd





Report N°: M121159

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012013973	2012013974	2012013975	2012013976	2012013977	2012013978
	Client ID	8146-01	8146-02	8146-03	8146-04	8146-01	Method
Analyte Name	PQL					Duplicate	Blank
Benzene	0.001	nd	nd	nd	nd	nd	nd
Bromobenzene	0.001	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.001	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.001	nd	nd	nd	nd	nd	nd
Bromomethane	0.001	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.001	nd	nd	nd	nd	nd	nd
s-Butylbenzene	0.001	nd	nd	nd	nd	nd	nd
t-Butylbenzene	0.001	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.001	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.001	nd	nd	nd	nd	nd	nd
Chloroethane	0.001	nd	nd	nd	nd	nd	nd
Chloromethane	0.001	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.001	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.001	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.001	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.001	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane	0.001	nd	nd	nd	nd	nd	nd
Dibromomethane	0.001	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.001	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.001	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd	nd	nd	nd	nd
Dichlorodifluoromethane	0.001	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.001	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.001	nd	nd	nd	nd	nd	nd





Report N°: M121159

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012013973	2012013974	2012013975	2012013976	2012013977	2012013978
	Client ID	8146-01	8146-02	8146-03	8146-04	8146-01	Method
Analyte Name	PQL					Duplicate	Blank
1,1-Dichloroethene	0.001	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.001	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.001	nd	nd	nd	nd	nd	nd
Dichloromethane	0.01	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.001	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.001	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.001	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.001	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.001	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.001	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.001	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.001	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.001	nd	nd	nd	nd	nd	nd
p-Isopropyltoluene	0.001	nd	nd	nd	nd	nd	nd
Naphthalene	0.001	nd	nd	nd	nd	nd	nd
Propylbenzene	0.001	nd	nd	nd	nd	nd	nd
Styrene	0.001	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.001	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd	nd	nd	nd	nd	nd
Toluene	0.001	nd	nd	nd	nd	nd	nd
Tribromomethane	0.001	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.001	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.001	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	0.001	nd	nd	nd	nd	nd	nd





Report N°: M121159

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012013973	2012013974	2012013975	2012013976	2012013977	2012013978
	Client ID	8146-01	8146-02	8146-03	8146-04	8146-01	Method
Analyte Name	PQL					Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd	nd	nd	nd	nd	nd
Trichloroethene	0.001	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.001	nd	nd	nd	nd	nd	nd
Trichloromethane	0.001	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.001	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.001	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.001	nd	nd	nd	nd	nd	nd
Vinyl Chloride	0.001	nd	nd	nd	nd	nd	nd
m&p-Xylenes	0.001	nd	nd	nd	nd	nd	nd
o-Xylene	0.001	nd	nd	nd	nd	nd	nd





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012013973	2012013974	2012013975	2012013977	2012013978
	Client ID	8146-01	8146-02	8146-03	8146-01	Method
Analyte Name	PQL				Duplicate	Blank
Bromobenzene	0.1	nd	nd	nd	nd	nd
Bromochloromethane	0.1	nd	nd	nd	nd	nd
Bromodichloromethane	0.1	nd	nd	nd	nd	nd
Bromoethane	0.1	nd	nd	nd	nd	nd
Bromoethyne	0.1	nd	nd	nd	nd	nd
Dibromochloromethane	0.1	nd	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd	nd	nd	nd
Dibromoethane	0.1	nd	nd	nd	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd	nd	nd	nd
Dibromomethane	0.1	nd	nd	nd	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd	nd	nd	nd
Tetrabromoethane	0.1	nd	nd	nd	nd	nd
Tetrabromoethene	0.1	nd	nd	nd	nd	nd
Tribromoethane	0.1	nd	nd	nd	nd	nd
Tribromoethene	0.1	nd	nd	nd	nd	nd
Tribromomethane	0.1	nd	nd	nd	nd	nd
Vinyl bromide	0.1	nd	nd	nd	nd	nd





Report N°: M121159

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012013976	2012013978
	Client ID	8146-04	Method
Analyte Name	PQL		Blank
C6-C9 (Purge & Trap)	0.01	nd	nd

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012013973	2012013974	2012013975	2012013976	2012013977	2012013978
	Client ID	8146-01	8146-02	8146-03	8146-04	8146-01	Method
Analyte Name	PQL					Duplicate	Blank
Dibromofluoromethane		99	93	74	98	99	101
12-Dichloroethane-d4		119	119	111	120	119	119
Toluene-d8		102	102	104	101	102	102
p-Bromofluorobenzene		103	103	103	103	103	103





Report N°: M121159

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014260	2012014261
	Client ID	8146-02	8146-02
Analyte Name	PQL	Spike	Spike Dup
Total C6-C36		106	103

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012013981	2012013982
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Benzene		116	120
Bromodichloromethane		92	95
Carbon tetrachloride		100	105
Chlorobenzene		120	125
Dibromochloromethane		87	90
1,2-Dichlorobenzene		120	127
1,3-Dichlorobenzene		115	120
1,4-Dichlorobenzene		102	107
1,2-Dichloroethane		110	115
1,1-Dichloroethane		115	119





Report N°: M121159

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012013981	2012013982
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
trans-1,2-Dichloroethene		106	109
Dichloromethane		109	113
1,2-Dichloropropane		116	121
Ethylbenzene		105	109
1,1,2,2-Tetrachloroethane		109	114
Tetrachloroethene		111	115
Toluene		114	117
Tribromomethane		79	83
1,1,1-Trichloroethane		106	110

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012013981	2012013982
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		112	115
Trichloroethene		111	114
Trichloromethane		112	116





Report N°: M121159

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012013981	2012013982
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		107	101
cis-1,2-Dibromoethene		111	108
trans-1,2-Dibromoethene		111	104
1,2-Dibromoethene(c,t)		111	106
Tribromoethene		109	103
Vinyl bromide		129	117

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012013981	2012013982
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
C6-C9 (Purge & Trap)		127	123





Report N°: M121159

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012013981	2012013982
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		98	97
12-Dichloroethane-d4		107	105
Toluene-d8		103	102
p-Bromofluorobenzene		104	102

Report N°: M121159



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

CHAIN OF CUSTODY RECORD/ANALYSIS REQUEST

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	41	3	page

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West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 921	3 7611 Go	Ider Contact:	Just -	Golder En	nail Address: V 🤄 🦕 @g	older.c	om.au	T	elepho	ne/Fax				C	Contac	t	In the series	
Address where reports should be sent to PO Box 1914 West Perth, WA 6872 Telephone (61 8) 9213 7600	Other K	Lely Mu	ndlc	Kmund	le "	Ø		5			A	nalyse	es Req	uired			Quote No'.	
Fax (61 8) 9213 7611	Phone		Fax			Container	- /	5, VOG	с. С. е	•							(102120517 WB)	
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WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

To:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	14/06/2012
Email	svieillet@golder.com.au	Ref:	M121176

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No.:	117643092
Our Reference Number:	M121176
Date Received:	14-Jun-2012
Estimated date of report:	21-Jun-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage

- All aqueous samples are stored for two weeks after reporting.

- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

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Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com

Form - 009

Date of Issue 23/05/12





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

21-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121176

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Six samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

14-Jun-2012

14-Jun-2012

RESULTS:

Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Report N°: M121176

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Sample units are expressed in mg/L

	Leeder ID	2012014162	2012014163	2012014168
	Client ID	8147-01	8147-02	8147-01
Analyte Name	PQL			Duplicate
Aluminium	0.001	0.019	0.024	0.019
Arsenic	0.0005	nd	nd	nd
Cadmium	0.0002	nd	nd	nd
Chromium	0.001	nd	nd	nd
Iron	0.001	0.010	0.008	0.010
Lead	0.001	nd	nd	nd
Manganese	0.001	0.024	0.031	0.026
Mercury	0.00005	nd	nd	nd
Nickel	0.001	0.002	0.003	0.002
Zinc	0.001	0.005	0.018	0.005

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
Aluminium	0.001	nd
Arsenic	0.0005	nd
Cadmium	0.0002	nd
Chromium	0.001	nd
Iron	0.001	nd
Lead	0.001	nd
Manganese	0.001	nd
Mercury	0.00005	nd
Nickel	0.001	nd
Zinc	0.001	nd





Report N°: M121176

Matrix: Water

Method: MA-1127.WW.04 Anions & Cations

Sample units are expressed in mg/L

	Leeder ID	2012014162	2012014163	2012014168
	Client ID	8147-01	8147-02	8147-01
Analyte Name	PQL			Duplicate
Nitrate as N	0.01	3.7	9.9	3.7

Matrix: Water

Method: MA-1127.WW.04 Anions & Cations

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
Nitrate as N	0.01	nd





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014162	2012014163	2012014164	2012014165	2012014166	2012014167	2012014168
	Client ID	8147-01	8147-02	8147-03	8147-04	8147-05	8147-06	8147-01
Analyte Name	PQL							Duplicate
Benzene	0.001	nd						
Bromobenzene	0.001	nd						
Bromochloromethane	0.001	nd						
Bromodichloromethane	0.001	nd						
Bromomethane	0.001	nd						
n-Butylbenzene	0.001	nd						
s-Butylbenzene	0.001	nd						
t-Butylbenzene	0.001	nd						
Carbon tetrachloride	0.001	nd						
Chlorobenzene	0.001	nd						
Chloroethane	0.001	nd						
Chloromethane	0.001	nd						
2-Chlorotoluene	0.001	nd						
4-Chlorotoluene	0.001	nd						
Dibromochloromethane	0.001	nd						
1,2-Dibromo-3-chloropropane	0.001	nd						
1,2-Dibromoethane	0.001	nd						
Dibromomethane	0.001	nd						
1,2-Dichlorobenzene	0.001	nd						
1,3-Dichlorobenzene	0.001	nd						
1,4-Dichlorobenzene	0.001	nd						
Dichlorodifluoromethane	0.001	nd						
1,2-Dichloroethane	0.001	nd						
1,1-Dichloroethane	0.001	nd						




Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014162	2012014163	2012014164	2012014165	2012014166	2012014167	2012014168
	Client ID	8147-01	8147-02	8147-03	8147-04	8147-05	8147-06	8147-01
Analyte Name	PQL							Duplicate
1,1-Dichloroethene	0.001	nd						
cis-1,2-Dichloroethene	0.001	nd						
trans-1,2-Dichloroethene	0.001	nd						
Dichloromethane	0.01	nd						
1,2-Dichloropropane	0.001	nd						
1,3-Dichloropropane	0.001	nd						
2,2-Dichloropropane	0.001	nd						
1,1-Dichloropropene	0.001	nd						
cis-1,3-Dichloropropene	0.001	nd						
trans-1,3-Dichloropropene	0.001	nd						
Ethylbenzene	0.001	nd						
Hexachloro-1,3-butadiene	0.001	nd						
Isopropylbenzene	0.001	nd						
p-Isopropyltoluene	0.001	nd						
Naphthalene	0.001	nd						
Propylbenzene	0.001	nd						
Styrene	0.001	nd						
1,1,2,2-Tetrachloroethane	0.001	nd						
Tetrachloroethene	0.001	nd	0.006	0.001	0.004	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd						
Toluene	0.001	nd						
Tribromomethane	0.001	nd						
1,2,3-Trichlorobenzene	0.001	nd						
1,2,4-Trichlorobenzene	0.001	nd						
1,1,1-Trichloroethane	0.001	nd						





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014162	2012014163	2012014164	2012014165	2012014166	2012014167	2012014168
	Client ID	8147-01	8147-02	8147-03	8147-04	8147-05	8147-06	8147-01
Analyte Name	PQL							Duplicate
1,1,2-Trichloroethane	0.001	nd						
Trichloroethene	0.001	0.13	0.66	nd	0.12	nd	nd	0.13
Trichlorofluoromethane	0.001	nd	nd	nd	0.001	nd	nd	nd
Trichloromethane	0.001	nd						
1,2,3-Trichloropropane	0.001	nd						
1,2,4-Trimethylbenzene	0.001	nd						
1,3,5-Trimethylbenzene	0.001	nd						
Vinyl Chloride	0.001	nd						
m&p-Xylenes	0.001	nd						
o-Xylene	0.001	nd						





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
Benzene	0.001	nd
Bromobenzene	0.001	nd
Bromochloromethane	0.001	nd
Bromodichloromethane	0.001	nd
Bromomethane	0.001	nd
n-Butylbenzene	0.001	nd
s-Butylbenzene	0.001	nd
t-Butylbenzene	0.001	nd
Carbon tetrachloride	0.001	nd
Chlorobenzene	0.001	nd
Chloroethane	0.001	nd
Chloromethane	0.001	nd
2-Chlorotoluene	0.001	nd
4-Chlorotoluene	0.001	nd
Dibromochloromethane	0.001	nd
1,2-Dibromo-3-chloropropane	0.001	nd
1,2-Dibromoethane	0.001	nd
Dibromomethane	0.001	nd
1,2-Dichlorobenzene	0.001	nd
1,3-Dichlorobenzene	0.001	nd
1,4-Dichlorobenzene	0.001	nd
Dichlorodifluoromethane	0.001	nd
1,2-Dichloroethane	0.001	nd
1,1-Dichloroethane	0.001	nd





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
1,1-Dichloroethene	0.001	nd
cis-1,2-Dichloroethene	0.001	nd
trans-1,2-Dichloroethene	0.001	nd
Dichloromethane	0.01	nd
1,2-Dichloropropane	0.001	nd
1,3-Dichloropropane	0.001	nd
2,2-Dichloropropane	0.001	nd
1,1-Dichloropropene	0.001	nd
cis-1,3-Dichloropropene	0.001	nd
trans-1,3-Dichloropropene	0.001	nd
Ethylbenzene	0.001	nd
Hexachloro-1,3-butadiene	0.001	nd
Isopropylbenzene	0.001	nd
p-Isopropyltoluene	0.001	nd
Naphthalene	0.001	nd
Propylbenzene	0.001	nd
Styrene	0.001	nd
1,1,2,2-Tetrachloroethane	0.001	nd
Tetrachloroethene	0.001	nd
1,1,1,2-Tetrachloroethane	0.001	nd
Toluene	0.001	nd
Tribromomethane	0.001	nd
1,2,3-Trichlorobenzene	0.001	nd
1,2,4-Trichlorobenzene	0.001	nd
1,1,1-Trichloroethane	0.001	nd





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
1,1,2-Trichloroethane	0.001	nd
Trichloroethene	0.001	nd
Trichlorofluoromethane	0.001	nd
Trichloromethane	0.001	nd
1,2,3-Trichloropropane	0.001	nd
1,2,4-Trimethylbenzene	0.001	nd
1,3,5-Trimethylbenzene	0.001	nd
Vinyl Chloride	0.001	nd
m&p-Xylenes	0.001	nd
o-Xylene	0.001	nd





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014162	2012014163	2012014164	2012014165	2012014166	2012014168
	Client ID	8147-01	8147-02	8147-03	8147-04	8147-05	8147-01
Analyte Name	PQL						Duplicate
Bromobenzene	0.1	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethyne	0.1	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd	nd	nd	nd	nd
Dibromoethane	0.1	nd	nd	nd	nd	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd	nd	nd	nd	nd
Dibromomethane	0.1	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromoethane	0.1	nd	nd	nd	nd	nd	nd
Tribromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromomethane	0.1	nd	nd	nd	nd	nd	nd
Vinyl bromide	0.1	nd	nd	nd	nd	nd	nd





Report N°: M121176

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
Bromobenzene	0.1	nd
Bromochloromethane	0.1	nd
Bromodichloromethane	0.1	nd
Bromoethane	0.1	nd
Bromoethyne	0.1	nd
Dibromochloromethane	0.1	nd
1,2-Dibromo-3-chloropropane	0.1	nd
Dibromoethane	0.1	nd
cis-1,2-Dibromoethene	0.1	nd
trans-1,2-Dibromoethene	0.1	nd
1,2-Dibromoethene(c,t)	0.1	nd
Dibromomethane	0.1	nd
1,1,2,2-Tetrabromoethane	0.1	nd
Tetrabromoethane	0.1	nd
Tetrabromoethene	0.1	nd
Tribromoethane	0.1	nd
Tribromoethene	0.1	nd
Tribromomethane	0.1	nd
Vinyl bromide	0.1	nd





Report N°: M121176

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014167
	Client ID	8147-06
Analyte Name	PQL	
C6-C9 (Purge & Trap)	0.01	nd

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
C6-C9 (Purge & Trap)	0.01	nd





Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014164	2012014165	2012014166
	Client ID 8147-03 8147-04		8147-05	
Analyte Name	PQL			
C6-C9	0.01	nd	nd	nd
C10-C14	0.01	nd	nd	nd
C15-C28	0.05	nd	nd	nd
C29-C36	0.05	nd	nd	nd
Total C6-C36	0.05	nd	nd	nd

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012014169	2012014411
	Client ID	Method	8147-03
Analyte Name	PQL	Blank	Duplicate
C6-C9	0.01	nd	nd
C10-C14	0.01	nd	nd
C15-C28	0.05	nd	nd
C29-C36	0.05	nd	nd
Total C6-C36	0.05	nd	nd





Report N°: M121176

Matrix: Water

Method: VOC Surrogate Recovery

Sample units are expressed in %

	Leeder ID	2012014162	2012014163	2012014164	2012014165	2012014166	2012014167	2012014168
	Client ID	8147-01	8147-02	8147-03	8147-04	8147-05	8147-06	8147-01
Analyte Name	PQL							Duplicate
Dibromofluoromethane		94	94	83	96	95	94	79
12-Dichloroethane-d4		101	104	102	106	108	110	97
Toluene-d8		100	100	101	100	102	101	100
p-Bromofluorobenzene		103	103	103	104	104	104	102

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014169
	Client ID	Method
Analyte Name	PQL	Blank
Dibromofluoromethane		96
12-Dichloroethane-d4		101
Toluene-d8		100
p-Bromofluorobenzene		103





Report N°: M121176

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014170	2012014171
	Client ID	8147-01	8147-01
Analyte Name	PQL	Spike	Spike Dup
Aluminium		115	112
Arsenic		107	109
Cadmium		107	109
Chromium		99	99
Iron		100	96
Lead		99	101
Manganese		98	99
Mercury		102	106
Nickel		98	100
Zinc		111	115

Matrix: Water

Method: MA-1127.WW.04 Anions & Cations

	Leeder ID	2012014170	2012014171
	Client ID	8147-01	8147-01
Analyte Name	PQL	Spike	Spike Dup
Nitrate as N		94	92





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014172	2012014173
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		101	99
Dibromochloromethane		97	95
1,4-Dichlorobenzene		115	114
1,2-Dichloroethane		123	121
1,1-Dichloroethane		121	118

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014172	2012014173
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1-Dichloroethene		101	100
trans-1,2-Dichloroethene		114	112
Dichloromethane		121	119
Ethylbenzene		125	122
1,1,2,2-Tetrachloroethane		120	115
Tetrachloroethene		119	117
Toluene		121	118
Tribromomethane		97	93
1,1,1-Trichloroethane		123	121





Report N°: M121176

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014172	2012014173
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		120	117
Trichloroethene		116	115
Trichloromethane		124	120

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014172	2012014173
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		101	98
Dibromochloromethane		96	93
Tribromomethane		95	92





Report N°: M121176

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014172	2012014173
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
C6-C9 (Purge & Trap)		127	123

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

]	Leeder ID	2012014412	2012014413
	Client ID	8147-04	8147-04
Analyte Name	PQL	Spike	Spike Dup
Total C6-C36		89	83





Report N°: M121176

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014172	2012014173
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		96	96
12-Dichloroethane-d4		104	104
Toluene-d8		100	101
p-Bromofluorobenzene		103	103

Report N°: M121176



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

	CHAIN OF CUSTO	DY RECOR	D/ANALYS	IS R	EQUE	ST		Q 8	3147	page_lot_l
Golder	Project Number:	,43092	P. C. M		Laborator	y Name:	Le	rede	Con	netro
1 Havelock Street					Address:	Inity.	-5/	18 K	edla	nd or
West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 921	13 7611 Gelder Contact:	Golder En	ail Address:	om.au	Telephone	1874			Contact:	8
Address where reports should be sent to	Keely Mundle	kmur	dle -	· · · ·	- 74-420-48	t	Analyses	Required	NUMERO DE	
L PO Box 1914 West Perth, WA 6872 Telephone (61 8) 9213 7600	A CH34 SIC 30C	allan allan allan <u>an allan an tarih</u> t	S		10 65					22 2 1705 P
Tax (010) 9215.7011	Phone Fax	*	Containe	~	-Ca /					
Sample Control Number (SCN	Sample Date Matrix (over) (D / M / Y)		Number of	Suite	2 Holl				RUSH	Remarks (over)
8147-01	Nater BIG112		6	\times						
- 02			6	X						
- 03			5	-						
- 05				$-\frac{2}{5}$						
- 06					X					
- 07										
- 08										
- 09										
- 10					en la la					
- 11										-
- 12										
Sampler's Signature:	Relinquished by Signature	Company	Date 13/6/12		Time	Rec	ceived b	y: Signatur	e Cor	npany reder Consulting
Sample Storage (°C)	Relinquished by: Signature	Company	Date		Time	Red	ceived b	y: Signatur	e Cor	mpany
Comments: Quote No;	Method of Shipment:	Waybill No:		Receiv	ed for Lab b	y: inck		Date 1461	2	Time
QQ 2120517 WB1	Shipped by:	Shipment Condition Seal intact:		Temp (°C) Cool	er opened	by:	Date		Time

WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

То:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	15/06/2012
Email	svieillet@golder.com.au	Ref:	M121183

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No .:	117643092
Our Reference Number:	M121183
Date Received:	15-Jun-2012
Estimated date of report:	22-Jun-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage - A

- All aqueous samples are stored for two weeks after reporting.
- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

Melbourne Tel: +613 9874 1988 Fax: +613 9874 1933 Sydney Tel: +612 9959 2351 Fax: +612 8212 5889 Adelaide Tel: +618 8377 4444 Fax: +618 8377 4399 Brisbane Tel: +617 3899 2311 Fax: +617 3899 2322

Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com

Form - 009

Date of Issue 23/05/12





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

21-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121183

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Eight samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

15-Jun-2012

15-Jun-2012

RESULTS: Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Report N°: M121183

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Sample units are expressed in mg/L

	Leeder ID	2012014199
	Client ID	Q8148-04
Analyte Name	PQL	
Aluminium	0.001	0.001
Arsenic	0.0005	nd
Cadmium	0.0002	nd
Chromium	0.001	nd
Iron	0.001	0.003
Lead	0.001	nd
Manganese	0.001	nd
Mercury	0.00005	nd
Nickel	0.001	nd
Zinc	0.001	0.002

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

	Leeder ID	2012014207	2012014208
	Client ID	Q8148-04	Method
Analyte Name	PQL	Duplicate	Blank
Aluminium	0.001	0.001	nd
Arsenic	0.0005	nd	nd
Cadmium	0.0002	nd	nd
Chromium	0.001	nd	nd
Iron	0.001	0.003	nd
Lead	0.001	nd	nd
Manganese	0.001	nd	nd
Mercury	0.00005	nd	nd
Nickel	0.001	nd	nd
Zinc	0.001	0.002	nd





Report N°: M121183

Matrix: Water

Method: MA-1127.WW.04 Anions & Cations

Sample units are expressed in mg/L

	Leeder ID	2012014199
	Client ID	Q8148-04
Analyte Name	PQL	
Nitrate as N	0.01	nd

Matrix: Water

Method: MA-1127.WW.04 Anions & Cations

	Leeder ID	2012014207	2012014208
	Client ID	Q8148-04	Method
Analyte Name	PQL	Duplicate	Blank
Nitrate as N	0.01	nd	nd





Report N°: M121183

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014199	2012014200	2012014201	2012014202	2012014203	2012014204	2012014205
	Client ID	Q8148-04	Q8148-01	Q8148-02	Q8148-05	Q8148-06	Q8148-07	Q8148-08
Analyte Name	PQL							
C6-C9	0.01	nd						
C10-C14	0.01	nd						
C15-C28	0.05	nd						
C29-C36	0.05	nd						
Total C6-C36	0.05	nd						

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012014207	2012014208
	Client ID	Q8148-04	Method
Analyte Name	PQL	Duplicate	Blank
C6-C9	0.01	nd	nd
C10-C14	0.01	nd	nd
C15-C28	0.05	nd	nd
C29-C36	0.05	nd	nd
Total C6-C36	0.05	nd	nd





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014199	2012014200	2012014201	2012014202	2012014203	2012014204	2012014205
	Client ID	Q8148-04	Q8148-01	Q8148-02	Q8148-05	Q8148-06	Q8148-07	Q8148-08
Analyte Name	PQL							
Benzene	0.001	nd						
Bromobenzene	0.001	nd						
Bromochloromethane	0.001	nd						
Bromodichloromethane	0.001	nd						
Bromomethane	0.001	nd						
n-Butylbenzene	0.001	nd						
s-Butylbenzene	0.001	nd						
t-Butylbenzene	0.001	nd						
Carbon tetrachloride	0.001	nd						
Chlorobenzene	0.001	nd						
Chloroethane	0.001	nd						
Chloromethane	0.001	nd						
2-Chlorotoluene	0.001	nd						
4-Chlorotoluene	0.001	nd						
Dibromochloromethane	0.001	nd						
1,2-Dibromo-3-chloropropane	0.001	nd						
1,2-Dibromoethane	0.001	nd						
Dibromomethane	0.001	nd						
1,2-Dichlorobenzene	0.001	nd						
1,3-Dichlorobenzene	0.001	nd						
1,4-Dichlorobenzene	0.001	nd						
Dichlorodifluoromethane	0.001	nd						
1,2-Dichloroethane	0.001	nd						
1,1-Dichloroethane	0.001	nd	nd	nd	nd	nd	0.002	nd





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014199	2012014200	2012014201	2012014202	2012014203	2012014204	2012014205
	Client ID	Q8148-04	Q8148-01	Q8148-02	Q8148-05	Q8148-06	Q8148-07	Q8148-08
Analyte Name	PQL							
1,1-Dichloroethene	0.001	nd						
cis-1,2-Dichloroethene	0.001	nd	nd	nd	0.001	nd	0.002	0.002
trans-1,2-Dichloroethene	0.001	nd						
Dichloromethane	0.01	nd						
1,2-Dichloropropane	0.001	nd						
1,3-Dichloropropane	0.001	nd						
2,2-Dichloropropane	0.001	nd						
1,1-Dichloropropene	0.001	nd						
cis-1,3-Dichloropropene	0.001	nd						
trans-1,3-Dichloropropene	0.001	nd						
Ethylbenzene	0.001	nd						
Hexachloro-1,3-butadiene	0.001	nd						
Isopropylbenzene	0.001	nd						
p-Isopropyltoluene	0.001	nd						
Naphthalene	0.001	nd						
Propylbenzene	0.001	nd						
Styrene	0.001	nd						
1,1,2,2-Tetrachloroethane	0.001	nd						
Tetrachloroethene	0.001	nd	0.003	0.003	0.003	nd	0.010	0.014
1,1,1,2-Tetrachloroethane	0.001	nd						
Toluene	0.001	nd						
Tribromomethane	0.001	nd						
1,2,3-Trichlorobenzene	0.001	nd						
1,2,4-Trichlorobenzene	0.001	nd						
1,1,1-Trichloroethane	0.001	nd						





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Leeder ID	2012014199	2012014200	2012014201	2012014202	2012014203	2012014204	2012014205
Client ID	Q8148-04	Q8148-01	Q8148-02	Q8148-05	Q8148-06	Q8148-07	Q8148-08
PQL							
0.001	nd	nd	nd	nd	nd	nd	nd
0.001	nd	1.1	0.094	0.024	nd	1.1	0.005
0.001	nd	nd	nd	nd	nd	0.001	nd
0.001	nd	0.001	nd	nd	nd	0.003	nd
0.001	nd	nd	nd	nd	nd	nd	nd
0.001	nd	nd	nd	nd	nd	nd	nd
0.001	nd	nd	nd	nd	nd	nd	nd
0.001	nd	nd	nd	nd	nd	nd	nd
0.001	nd	nd	nd	nd	nd	nd	nd
0.001	nd	nd	nd	nd	nd	nd	nd
	Leeder ID Client ID PQL 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001	Leeder ID 2012014199 Client ID Q8148-04 PQL - 0.001 nd 0.001 nd	Leeder ID 2012014199 2012014200 Client ID Q8148-04 Q8148-01 PQL 2012014199 Q8148-01 0.001 nd nd 0.001 nd 1.1 0.001 nd 0.001 0.001 nd 0.001 0.001 nd 0.001 0.001 nd 0.001 0.001 nd nd 0.001 nd nd	Leeder ID201201419920120142002012014201Client IDQ8148-04Q8148-01Q8148-02PQL </td <td>Leeder ID2012014199201201420020120142012012014202Client IDQ8148-04Q8148-01Q8148-02Q8148-05PQLIIQ8148-04Q8148-010.001ndndndnd0.001nd1.10.0940.0240.001nd1.10.0940.0240.001ndndndnd0.001nd0.001ndnd0.001nd0.001ndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd</td> <td>Leeder ID Client ID20120141992012014200201201420120120142022012014203Q8148-04 Q8148-04Q8148-01 Q8148-01Q8148-02 Q8148-02Q8148-05 Q8148-05Q8148-06PQLImage: Constraint of the second sec</td> <td>Leeder ID Client ID201201419920120142002012014201201201420220120142032012014204Q8148-04Q8148-01Q8148-02Q8148-05Q8148-06Q8148-07PQLImage: Client IDImage: Client IDImage: Client IDImage: Client ID0.001ndndndndnd0.001ndndndndnd0.001nd1.10.0940.024nd1.10.001ndndndnd0.0010.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd<</td>	Leeder ID2012014199201201420020120142012012014202Client IDQ8148-04Q8148-01Q8148-02Q8148-05PQLIIQ8148-04Q8148-010.001ndndndnd0.001nd1.10.0940.0240.001nd1.10.0940.0240.001ndndndnd0.001nd0.001ndnd0.001nd0.001ndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd0.001ndndndnd	Leeder ID Client ID20120141992012014200201201420120120142022012014203Q8148-04 Q8148-04Q8148-01 Q8148-01Q8148-02 Q8148-02Q8148-05 Q8148-05Q8148-06PQLImage: Constraint of the second sec	Leeder ID Client ID201201419920120142002012014201201201420220120142032012014204Q8148-04Q8148-01Q8148-02Q8148-05Q8148-06Q8148-07PQLImage: Client IDImage: Client IDImage: Client IDImage: Client ID0.001ndndndndnd0.001ndndndndnd0.001nd1.10.0940.024nd1.10.001ndndndnd0.0010.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd0.001ndndndndnd<





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014206	2012014207	2012014208
	Client ID	Q8148-03	Q8148-04	Method
Analyte Name	PQL		Duplicate	Blank
Benzene	0.001	nd	nd	nd
Bromobenzene	0.001	nd	nd	nd
Bromochloromethane	0.001	nd	nd	nd
Bromodichloromethane	0.001	nd	nd	nd
Bromomethane	0.001	nd	nd	nd
n-Butylbenzene	0.001	nd	nd	nd
s-Butylbenzene	0.001	nd	nd	nd
t-Butylbenzene	0.001	nd	nd	nd
Carbon tetrachloride	0.001	nd	nd	nd
Chlorobenzene	0.001	nd	nd	nd
Chloroethane	0.001	nd	nd	nd
Chloromethane	0.001	nd	nd	nd
2-Chlorotoluene	0.001	nd	nd	nd
4-Chlorotoluene	0.001	nd	nd	nd
Dibromochloromethane	0.001	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.001	nd	nd	nd
1,2-Dibromoethane	0.001	nd	nd	nd
Dibromomethane	0.001	nd	nd	nd
1,2-Dichlorobenzene	0.001	nd	nd	nd
1,3-Dichlorobenzene	0.001	nd	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd	nd
Dichlorodifluoromethane	0.001	nd	nd	nd
1,2-Dichloroethane	0.001	nd	nd	nd
1,1-Dichloroethane	0.001	nd	nd	nd





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014206	2012014207	2012014208
	Client ID	Q8148-03	Q8148-04	Method
Analyte Name	PQL		Duplicate	Blank
1,1-Dichloroethene	0.001	nd	nd	nd
cis-1,2-Dichloroethene	0.001	nd	nd	nd
trans-1,2-Dichloroethene	0.001	nd	nd	nd
Dichloromethane	0.01	nd	nd	nd
1,2-Dichloropropane	0.001	nd	nd	nd
1,3-Dichloropropane	0.001	nd	nd	nd
2,2-Dichloropropane	0.001	nd	nd	nd
1,1-Dichloropropene	0.001	nd	nd	nd
cis-1,3-Dichloropropene	0.001	nd	nd	nd
trans-1,3-Dichloropropene	0.001	nd	nd	nd
Ethylbenzene	0.001	nd	nd	nd
Hexachloro-1,3-butadiene	0.001	nd	nd	nd
Isopropylbenzene	0.001	nd	nd	nd
p-Isopropyltoluene	0.001	nd	nd	nd
Naphthalene	0.001	nd	nd	nd
Propylbenzene	0.001	nd	nd	nd
Styrene	0.001	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd	nd	nd
Tetrachloroethene	0.001	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd	nd	nd
Toluene	0.001	nd	nd	nd
Tribromomethane	0.001	nd	nd	nd
1,2,3-Trichlorobenzene	0.001	nd	nd	nd
1,2,4-Trichlorobenzene	0.001	nd	nd	nd
1,1,1-Trichloroethane	0.001	nd	nd	nd





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014206	2012014207	2012014208
	Client ID	Q8148-03	Q8148-04	Method
Analyte Name	PQL		Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd	nd	nd
Trichloroethene	0.001	nd	nd	nd
Trichlorofluoromethane	0.001	nd	nd	nd
Trichloromethane	0.001	nd	nd	nd
1,2,3-Trichloropropane	0.001	nd	nd	nd
1,2,4-Trimethylbenzene	0.001	nd	nd	nd
1,3,5-Trimethylbenzene	0.001	nd	nd	nd
Vinyl Chloride	0.001	nd	nd	nd
m&p-Xylenes	0.001	nd	nd	nd
o-Xylene	0.001	nd	nd	nd





Report N°: M121183

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014199	2012014200	2012014201	2012014202	2012014203	2012014204	2012014205
	Client ID	Q8148-04	Q8148-01	Q8148-02	Q8148-05	Q8148-06	Q8148-07	Q8148-08
Analyte Name	PQL							
Bromobenzene	0.1	nd						
Bromochloromethane	0.1	nd						
Bromodichloromethane	0.1	nd						
Bromoethane	0.1	nd						
Bromoethyne	0.1	nd						
Dibromochloromethane	0.1	nd						
1,2-Dibromo-3-chloropropane	0.1	nd						
Dibromoethane	0.1	nd						
cis-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd	nd	3.9
trans-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd	nd	0.6
1,2-Dibromoethene(c,t)	0.1	nd						
Dibromomethane	0.1	nd						
1,1,2,2-Tetrabromoethane	0.1	nd						
Tetrabromoethane	0.1	nd						
Tetrabromoethene	0.1	nd						
Tribromoethane	0.1	nd						
Tribromoethene	0.1	nd						
Tribromomethane	0.1	nd						
Vinyl bromide	0.1	nd						





Report N°: M121183

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014207	2012014208
	Client ID	Q8148-04	Method
Analyte Name	PQL	Duplicate	Blank
Bromobenzene	0.1	nd	nd
Bromochloromethane	0.1	nd	nd
Bromodichloromethane	0.1	nd	nd
Bromoethane	0.1	nd	nd
Bromoethyne	0.1	nd	nd
Dibromochloromethane	0.1	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd
Dibromoethane	0.1	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd
Dibromomethane	0.1	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd
Tetrabromoethane	0.1	nd	nd
Tetrabromoethene	0.1	nd	nd
Tribromoethane	0.1	nd	nd
Tribromoethene	0.1	nd	nd
Tribromomethane	0.1	nd	nd
Vinyl bromide	0.1	nd	nd





Report N°: M121183

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014206	2012014208
	Client ID	Q8148-03	Method
Analyte Name	PQL		Blank
C6-C9 (Purge & Trap)	0.01	0.01	nd

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014199	2012014200	2012014201	2012014202	2012014203	2012014204	2012014205
	Client ID	Q8148-04	Q8148-01	Q8148-02	Q8148-05	Q8148-06	Q8148-07	Q8148-08
Analyte Name	PQL							
Dibromofluoromethane		80	84	85	82	96	98	83
12-Dichloroethane-d4		105	111	101	107	113	115	111
Toluene-d8		102	102	102	102	101	102	102
p-Bromofluorobenzene		104	104	104	103	103	105	104





Report N°: M121183

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014206	2012014207	2012014208
	Client ID	Q8148-03	Q8148-04	Method
Analyte Name	PQL		Duplicate	Blank
Dibromofluoromethane		100	91	95
12-Dichloroethane-d4		117	112	114
Toluene-d8		102	102	101
p-Bromofluorobenzene		104	105	104





Report N°: M121183

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014209	2012014210
	Client ID	Q8148-04	Q8148-04
Analyte Name	PQL	Spike	Spike Dup
Aluminium		107	108
Arsenic		107	104
Cadmium		107	108
Chromium		99	100
Iron		96	98
Lead		101	102
Manganese		97	99
Mercury		103	104
Nickel		100	100
Zinc		110	110

Matrix: Water

Method: MA-1127.WW.04 Anions & Cations

	Leeder ID	2012014209	2012014210
	Client ID	Q8148-04	Q8148-04
Analyte Name	PQL	Spike	Spike Dup
Nitrate as N		72	73





Report N°: M121183

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

:	Leeder ID	2012014465	2012014466
	Client ID	Q8148-01	Q8148-01
Analyte Name	PQL	Spike	Spike Dup
Total C6-C36		113	113

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID Client ID	2012014211 Method	2012014212 Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		101	99
Dibromochloromethane		97	95
1,4-Dichlorobenzene		115	114
1,2-Dichloroethane		123	121
1,1-Dichloroethane		121	118





Report N°: M121183

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014211	2012014212
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1-Dichloroethene		101	100
trans-1,2-Dichloroethene		114	112
Dichloromethane		121	119
Ethylbenzene		125	122
1,1,2,2-Tetrachloroethane		120	115
Tetrachloroethene		119	117
Toluene		121	118
Tribromomethane		97	93
1,1,1-Trichloroethane		123	121

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014211	2012014212
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		120	117
Trichloroethene		116	115
Trichloromethane		124	120




Report N°: M121183

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014211	2012014212	
	Client ID Method Meth			
Analyte Name	PQL	Spike	Spike Dup	
Bromodichloromethane		101	98	
Dibromochloromethane		96	93	
Tribromomethane		95	92	

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

:	Leeder ID	2012014211	2012014212
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
C6-C9 (Purge & Trap)		127	123





Report N°: M121183

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014211	2012014212
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		96	96
12-Dichloroethane-d4		104	104
Toluene-d8		100	101
p-Bromofluorobenzene		103	103

Report N°: M121183



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

	CHAIN OF C	CHAIN OF CUSTODY RECORD/ANALYSIS REQUEST Q 8148 Page of							
Golder	Project Number:	17643092	Construction of the	La	boratory Na	ter,	Consult	n	- Constant
1 Havelock Street				Ad	idress: Md	heim			
West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 92	13 7611 Golder Contact:	Golder Er	mail Address: @golder.c	om.au (lephone/Fax	1-1-199	SS Conta	ct:	ndell
Address where reports should be sent to	Keely M.	udle kno	where a	- t. I.		Analyse	s Required		1201211222
West Perth, WA 6872 Telephone (61 8) 9213 7600 Fax (61 8) 9213 7611	- 0434 511361		<u>8</u>	OCS	5				and the second s
144 (010/52101011	Phone	Fax	ontaine	- DR	mis				
Sample Control Number (SCN	Sample Matrix (over) (D/M/Y)		umber of C	Wils Ca	Orgo			HSU	Remarks (over)
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- 02			4	1. 22.					QQ 2120517
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- 04			8		V V.				
- 05			5						
- 07			5	V					
- 08	VV		$\overline{\boldsymbol{\varsigma}}$						
- 09									
- 10									
- 11									
- 12				and the second	7				
Sampler's Signature:	Relinquished by: Signature	Company	Date 14612	Time		Received b	y Signature	Com	pany der Consulting
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6622120517WB1	Shipped by:	Shipment Condition	n:	Jandra	Behnel	L ened by:	15/6/12		Time
		Seal intact:	land View and		Cooler op	oneu by.	Date		

WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report

From: Vieillet, Sarah [mailto:svieillet@golder.com.au]
Sent: Friday, 15 June 2012 12:18 PM
To: AU.SampleReceipt.Mitcham (Melbourne)
Subject: RE: 117643092 (M121183)

Hi Sandra,

Please note the following edits to the COC for the samples that arrived at your lab this morning: Q8148-05 through Q8148-08 should all be analysed for Suite 1. Q8148-04 should be analysed for Suite 3 plus TPH.

Thanks!

Sarah





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

To:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	19/06/2012
Email	svieillet@golder.com.au	Ref:	M121214

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No.:	117643092
Our Reference Number:	M121214
Date Received:	19-Jun-2012
Estimated date of report:	26-Jun-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage

- All aqueous samples are stored for two weeks after reporting.

- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

Melbourne Tel: +613 9874 1988 Fax: +613 9874 1933 Sydney Tel: +612 9959 2351 Fax: +612 8212 5889 Adelaide Tel: +618 8377 4444 Fax: +618 8377 4399 Brisbane Tel: +617 3899 2311 Fax: +617 3899 2322

Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

26-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121214

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Five samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

19-Jun-2012

19-Jun-2012

RESULTS: Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014552	2012014553	2012014554	2012014555	2012014557	2012014558
	Client ID	8149-03	8149-01	8149-04	8149-05	8149-03	Method
Analyte Name	PQL					Duplicate	Blank
C6-C9	0.01	nd	nd	nd	nd	nd	nd
C10-C14	0.01	nd	nd	nd	nd	nd	nd
C15-C28	0.05	nd	nd	nd	nd	nd	nd
C29-C36	0.05	nd	nd	nd	nd	nd	nd
Total C6-C36	0.05	nd	nd	nd	nd	nd	nd

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012014556	2012014558
	Client ID	8149-02	Method
Analyte Name	PQL		Blank
C6-C9 (Purge & Trap)	0.01	nd	nd





Report N°: M121214

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014552	2012014553	2012014554	2012014555	2012014556	2012014557	2012014558
	Client ID	8149-03	8149-01	8149-04	8149-05	8149-02	8149-03	Method
Analyte Name	PQL						Duplicate	Blank
Benzene	0.001	0.015	nd	nd	0.001	nd	0.014	nd
Bromobenzene	0.001	nd						
Bromochloromethane	0.001	nd						
Bromodichloromethane	0.001	nd						
Bromomethane	0.001	nd						
n-Butylbenzene	0.001	nd						
s-Butylbenzene	0.001	nd						
t-Butylbenzene	0.001	nd						
Carbon tetrachloride	0.001	nd						
Chlorobenzene	0.001	nd	nd	nd	0.002	nd	nd	nd
Chloroethane	0.001	nd						
Chloromethane	0.001	nd						
2-Chlorotoluene	0.001	nd						
4-Chlorotoluene	0.001	nd						
Dibromochloromethane	0.001	nd						
1,2-Dibromo-3-chloropropane	0.001	nd						
1,2-Dibromoethane	0.001	nd						
Dibromomethane	0.001	nd						
1,2-Dichlorobenzene	0.001	nd	nd	nd	0.008	nd	nd	nd
1,3-Dichlorobenzene	0.001	nd	nd	nd	0.003	nd	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd	nd	0.002	nd	nd	nd
Dichlorodifluoromethane	0.001	nd						
1,2-Dichloroethane	0.001	nd	nd	nd	0.006	nd	nd	nd
1,1-Dichloroethane	0.001	0.003	nd	nd	0.025	nd	0.003	nd





Report N°: M121214

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014552	2012014553	2012014554	2012014555	2012014556	2012014557	2012014558
	Client ID	8149-03	8149-01	8149-04	8149-05	8149-02	8149-03	Method
Analyte Name	PQL						Duplicate	Blank
1,1-Dichloroethene	0.001	nd	nd	nd	0.018	nd	nd	nd
cis-1,2-Dichloroethene	0.001	0.019	nd	nd	0.17	nd	0.018	nd
trans-1,2-Dichloroethene	0.001	nd						
Dichloromethane	0.01	nd						
1,2-Dichloropropane	0.001	nd						
1,3-Dichloropropane	0.001	nd						
2,2-Dichloropropane	0.001	nd						
1,1-Dichloropropene	0.001	nd						
cis-1,3-Dichloropropene	0.001	nd						
trans-1,3-Dichloropropene	0.001	nd						
Ethylbenzene	0.001	nd						
Hexachloro-1,3-butadiene	0.001	nd						
Isopropylbenzene	0.001	nd						
p-Isopropyltoluene	0.001	nd						
Naphthalene	0.001	nd						
Propylbenzene	0.001	nd						
Styrene	0.001	nd						
1,1,2,2-Tetrachloroethane	0.001	nd						
Tetrachloroethene	0.001	nd	nd	nd	0.062	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd						
Toluene	0.001	nd						
Tribromomethane	0.001	nd						
1,2,3-Trichlorobenzene	0.001	nd						
1,2,4-Trichlorobenzene	0.001	nd						
1,1,1-Trichloroethane	0.001	nd						





Report N°: M121214

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014552	2012014553	2012014554	2012014555	2012014556	2012014557	2012014558
	Client ID	8149-03	8149-01	8149-04	8149-05	8149-02	8149-03	Method
Analyte Name	PQL						Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd						
Trichloroethene	0.001	0.003	nd	nd	0.030	nd	0.003	nd
Trichlorofluoromethane	0.001	nd	nd	nd	0.003	nd	nd	nd
Trichloromethane	0.001	nd	nd	nd	0.093	nd	nd	nd
1,2,3-Trichloropropane	0.001	nd						
1,2,4-Trimethylbenzene	0.001	nd						
1,3,5-Trimethylbenzene	0.001	nd						
Vinyl Chloride	0.001	nd						
m&p-Xylenes	0.001	nd						
o-Xylene	0.001	nd						





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014552	2012014553	2012014554	2012014555	2012014557	2012014558
	Client ID	8149-03	8149-01	8149-04	8149-05	8149-03	Method
Analyte Name	PQL					Duplicate	Blank
Bromobenzene	0.1	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethyne	0.1	nd	nd	nd	1.1	nd	nd
Dibromochloromethane	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd	nd	nd	nd	nd
Dibromoethane	0.1	nd	nd	nd	nd	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd	nd	37	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd	nd	5.5	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd	nd	43	nd	nd
Dibromomethane	0.1	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromoethane	0.1	nd	nd	nd	nd	nd	nd
Tribromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromomethane	0.1	nd	nd	nd	nd	nd	nd
Vinyl bromide	0.1	nd	nd	nd	28	nd	nd





Report N°: M121214

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014552	2012014553	2012014554	2012014555	2012014556	2012014557	2012014558
	Client ID	8149-03	8149-01	8149-04	8149-05	8149-02	8149-03	Method
Analyte Name	PQL						Duplicate	Blank
Dibromofluoromethane		99	79	100	100	84	99	98
12-Dichloroethane-d4		94	97	104	106	96	94	103
Toluene-d8		97	100	99	99	99	96	98
p-Bromofluorobenzene		93	101	100	101	101	94	100





Report N°: M121214

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014796	2012014797
	Client ID	8149-04	8149-04
Analyte Name	PQL	Spike	Spike Dup
Total C6-C36		126	124

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014559	2012014560
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Benzene		109	113
Bromodichloromethane		82	91
Carbon tetrachloride		76	96
Chlorobenzene		116	121
Dibromochloromethane		83	90
1,2-Dichlorobenzene		115	120
1,3-Dichlorobenzene		109	113
1,4-Dichlorobenzene		104	110
1,2-Dichloroethane		92	101





Report N°: M121214

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014559	2012014560
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1-Dichloroethene		99	103
trans-1,2-Dichloroethene		102	107
Dichloromethane		100	105
1,2-Dichloropropane		111	115
Ethylbenzene		105	109
1,1,2,2-Tetrachloroethane		100	103
Tetrachloroethene		106	112
Toluene		106	109
Tribromomethane		90	95
1,1,1-Trichloroethane		90	101

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014559	2012014560
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		106	110
Trichloroethene		107	112
Trichloromethane		101	109





Report N°: M121214

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014559	2012014560
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		91	98
Dibromochloromethane		91	95
Tribromomethane		99	97

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014559	2012014560
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		89	90
12-Dichloroethane-d4		84	91
Toluene-d8		98	99
p-Bromofluorobenzene		96	96

Report N°: M121214



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

	CHAIN OF CUSTOD	Y RECORD/A	ALYSIS	S REQUE	ST	Q 814	g pageof
Golder	Project Number: 1176	43092		Laborato	ry Name: Lee	der con	sulting
1 Havelock Street				Address	Amits,	18. Red	and Br
West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 9213 7	7611 Golder Contact:	Golder Email Addre	ss: @golder.com.	au Telephon	e/Fax:	Contact:	Lyndall
Address where reports should be sent to	Really Murc	(1 - Kronerraft	a gass	0.00	Analyses	s Required	
West Perth, WA 6872	Email		_				100
Fax (61 8) 9213 7611			ainers	not:			
Sample Control	Sample Date		f Cont	- 67			
Number (SCN	Matrix Sampled (over) (D/M/Y)		nþer o	165			T Remarks
61110 01			NUN	A A A			
-02	W0[[] 1816					88	Quote
- 03			S X				WBI
- 04			SX				
- 05	U U		4 ×				
- 06							
- 08							
- 09						-	
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WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

To:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	20/06/2012
Email	svieillet@golder.com.au	Ref:	M121225

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No.:	117643092
Our Reference Number:	M121225
Date Received:	20-Jun-2012
Estimated date of report:	27-Jun-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage

- All aqueous samples are stored for two weeks after reporting.
- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

Melbourne Tel: +613 9874 1988 Fax: +613 9874 1933 Sydney Tel: +612 9959 2351 Fax: +612 8212 5889 Adelaide Tel: +618 8377 4444 Fax: +618 8377 4399 Brisbane Tel: +617 3899 2311 Fax: +617 3899 2322

Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com

Form - 009

Date of Issue 23/05/12





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

29-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121225

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Seven samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

20-Jun-2012

20-Jun-2012

RESULTS: Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014577	2012014578	2012014579	2012014580	2012014581	2012014582
	Client ID	Q8145-05	Q8145-06	Q8145-01	Q8145-02	Q8145-03	Q8145-04
Analyte Name	PQL						
C6-C9	0.01	nd	0.99	nd	nd	nd	nd
C10-C14	0.01	nd	0.81	nd	nd	nd	nd
C15-C28	0.05	nd	nd	nd	nd	nd	nd
C29-C36	0.05	nd	nd	nd	nd	nd	nd
Total C6-C36	0.05	nd	1.8	nd	nd	nd	nd

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
C6-C9	0.01	nd	nd
C10-C14	0.01	nd	nd
C15-C28	0.05	nd	nd
C29-C36	0.05	nd	nd
Total C6-C36	0.05	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014577	2012014578	2012014579	2012014580	2012014581	2012014582	2012014583
	Client ID	Q8145-05	Q8145-06	Q8145-01	Q8145-02	Q8145-03	Q8145-04	Q8145-07
Analyte Name	PQL							
Benzene	0.001	nd	0.004	nd	nd	0.001	nd	nd
Bromobenzene	0.001	nd						
Bromochloromethane	0.001	nd						
Bromodichloromethane	0.001	nd						
Bromomethane	0.001	nd						
n-Butylbenzene	0.001	nd						
s-Butylbenzene	0.001	nd						
t-Butylbenzene	0.001	nd						
Carbon tetrachloride	0.001	nd						
Chlorobenzene	0.001	nd						
Chloroethane	0.001	nd	0.005	nd	nd	nd	nd	nd
Chloromethane	0.001	nd						
2-Chlorotoluene	0.001	nd						
4-Chlorotoluene	0.001	nd						
Dibromochloromethane	0.001	nd						
1,2-Dibromo-3-chloropropane	0.001	nd						
1,2-Dibromoethane	0.001	nd						
Dibromomethane	0.001	nd						
1,2-Dichlorobenzene	0.001	nd	0.002	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.001	nd						
1,4-Dichlorobenzene	0.001	nd						
Dichlorodifluoromethane	0.001	nd						
1,2-Dichloroethane	0.001	nd	0.002	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.001	nd	0.006	0.003	0.002	0.004	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014577	2012014578	2012014579	2012014580	2012014581	2012014582	2012014583
	Client ID	Q8145-05	Q8145-06	Q8145-01	Q8145-02	Q8145-03	Q8145-04	Q8145-07
Analyte Name	PQL							
1,1-Dichloroethene	0.001	nd	0.002	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.001	nd	0.20	0.050	0.049	0.016	nd	nd
trans-1,2-Dichloroethene	0.001	nd						
Dichloromethane	0.01	nd						
1,2-Dichloropropane	0.001	nd						
1,3-Dichloropropane	0.001	nd						
2,2-Dichloropropane	0.001	nd						
1,1-Dichloropropene	0.001	nd						
cis-1,3-Dichloropropene	0.001	nd						
trans-1,3-Dichloropropene	0.001	nd						
Ethylbenzene	0.001	nd	0.18	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.001	nd						
Isopropylbenzene	0.001	nd	0.005	nd	nd	nd	nd	nd
p-Isopropyltoluene	0.001	nd	0.004	nd	nd	nd	nd	nd
Naphthalene	0.001	nd	0.010	nd	nd	nd	nd	nd
Propylbenzene	0.001	nd	0.006	nd	nd	nd	nd	nd
Styrene	0.001	nd	0.007	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd						
Tetrachloroethene	0.001	nd	0.003	0.014	0.014	0.010	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd						
Toluene	0.001	nd	0.26	nd	nd	nd	nd	nd
Tribromomethane	0.001	nd						
1,2,3-Trichlorobenzene	0.001	nd						
1,2,4-Trichlorobenzene	0.001	nd						
1,1,1-Trichloroethane	0.001	nd						





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014577	2012014578	2012014579	2012014580	2012014581	2012014582	2012014583
	Client ID	Q8145-05	Q8145-06	Q8145-01	Q8145-02	Q8145-03	Q8145-04	Q8145-07
Analyte Name	PQL							
1,1,2-Trichloroethane	0.001	nd						
Trichloroethene	0.001	nd	0.002	0.007	0.007	0.008	nd	nd
Trichlorofluoromethane	0.001	nd	nd	nd	nd	0.002	nd	nd
Trichloromethane	0.001	nd	nd	nd	nd	0.003	nd	nd
1,2,3-Trichloropropane	0.001	nd						
1,2,4-Trimethylbenzene	0.001	nd	0.062	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.001	nd	0.016	nd	nd	nd	nd	nd
Vinyl Chloride	0.001	nd						
m&p-Xylenes	0.001	nd	0.30	nd	nd	nd	nd	nd
o-Xylene	0.001	nd	0.19	nd	nd	nd	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
Benzene	0.001	nd	nd
Bromobenzene	0.001	nd	nd
Bromochloromethane	0.001	nd	nd
Bromodichloromethane	0.001	nd	nd
Bromomethane	0.001	nd	nd
n-Butylbenzene	0.001	nd	nd
s-Butylbenzene	0.001	nd	nd
t-Butylbenzene	0.001	nd	nd
Carbon tetrachloride	0.001	nd	nd
Chlorobenzene	0.001	nd	nd
Chloroethane	0.001	nd	nd
Chloromethane	0.001	nd	nd
2-Chlorotoluene	0.001	nd	nd
4-Chlorotoluene	0.001	nd	nd
Dibromochloromethane	0.001	nd	nd
1,2-Dibromo-3-chloropropane	0.001	nd	nd
1,2-Dibromoethane	0.001	nd	nd
Dibromomethane	0.001	nd	nd
1,2-Dichlorobenzene	0.001	nd	nd
1,3-Dichlorobenzene	0.001	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd
Dichlorodifluoromethane	0.001	nd	nd
1,2-Dichloroethane	0.001	nd	nd
1,1-Dichloroethane	0.001	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
1,1-Dichloroethene	0.001	nd	nd
cis-1,2-Dichloroethene	0.001	nd	nd
trans-1,2-Dichloroethene	0.001	nd	nd
Dichloromethane	0.01	nd	nd
1,2-Dichloropropane	0.001	nd	nd
1,3-Dichloropropane	0.001	nd	nd
2,2-Dichloropropane	0.001	nd	nd
1,1-Dichloropropene	0.001	nd	nd
cis-1,3-Dichloropropene	0.001	nd	nd
trans-1,3-Dichloropropene	0.001	nd	nd
Ethylbenzene	0.001	nd	nd
Hexachloro-1,3-butadiene	0.001	nd	nd
Isopropylbenzene	0.001	nd	nd
p-Isopropyltoluene	0.001	nd	nd
Naphthalene	0.001	nd	nd
Propylbenzene	0.001	nd	nd
Styrene	0.001	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd	nd
Tetrachloroethene	0.001	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd	nd
Toluene	0.001	nd	nd
Tribromomethane	0.001	nd	nd
1,2,3-Trichlorobenzene	0.001	nd	nd
1,2,4-Trichlorobenzene	0.001	nd	nd
1,1,1-Trichloroethane	0.001	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd	nd
Trichloroethene	0.001	nd	nd
Trichlorofluoromethane	0.001	nd	nd
Trichloromethane	0.001	nd	nd
1,2,3-Trichloropropane	0.001	nd	nd
1,2,4-Trimethylbenzene	0.001	nd	nd
1,3,5-Trimethylbenzene	0.001	nd	nd
Vinyl Chloride	0.001	nd	nd
m&p-Xylenes	0.001	nd	nd
o-Xylene	0.001	nd	nd





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014577	2012014578	2012014579	2012014580	2012014581	2012014582
	Client ID	Q8145-05	Q8145-06	Q8145-01	Q8145-02	Q8145-03	Q8145-04
Analyte Name	PQL						
Bromobenzene	0.1	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethyne	0.1	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd	nd	nd	nd	nd
Dibromoethane	0.1	nd	nd	nd	nd	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd	1.7	1.6	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd	1.7	1.6	nd	nd
Dibromomethane	0.1	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromoethane	0.1	nd	nd	nd	nd	nd	nd
Tribromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromomethane	0.1	nd	nd	nd	nd	nd	nd
Vinyl bromide	0.1	nd	6.0	nd	nd	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
Bromobenzene	0.1	nd	nd
Bromochloromethane	0.1	nd	nd
Bromodichloromethane	0.1	nd	nd
Bromoethane	0.1	nd	nd
Bromoethyne	0.1	nd	nd
Dibromochloromethane	0.1	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd
Dibromoethane	0.1	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd
Dibromomethane	0.1	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd
Tetrabromoethane	0.1	nd	nd
Tetrabromoethene	0.1	nd	nd
Tribromoethane	0.1	nd	nd
Tribromoethene	0.1	nd	nd
Tribromomethane	0.1	nd	nd
Vinyl bromide	0.1	nd	nd





Report N°: M121225

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014583
	Client ID	Q8145-07
Analyta Nama	DOI	
	TQL	
C6-C9 (Purge & Trap)	0.01	nd

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012014585
	Client ID	Method
Analyte Name	PQL	Blank
C6-C9 (Purge & Trap)	0.01	nd





Report N°: M121225

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Sample units are expressed in mg/L

	Leeder ID	2012014577	2012014578
	Client ID	Q8145-05	Q8145-06
Analyte Name	PQL		
Aluminium	0.001	0.003	0.003
Arsenic	0.0005	nd	0.016
Cadmium	0.0002	nd	nd
Chromium	0.001	nd	nd
Iron	0.001	0.078	24
Lead	0.001	nd	nd
Manganese	0.001	0.19	0.021
Mercury	0.00005	nd	nd
Nickel	0.001	0.001	0.017
Zinc	0.001	0.002	nd

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
Aluminium	0.001	0.003	nd
Arsenic	0.0005	nd	nd
Cadmium	0.0002	nd	nd
Chromium	0.001	nd	nd
Iron	0.001	0.077	nd
Lead	0.001	nd	nd
Manganese	0.001	0.20	nd
Mercury	0.00005	nd	nd
Nickel	0.001	0.001	nd
Zinc	0.001	0.002	nd





Report N°: M121225

Matrix: Water

Method: VOC Surrogate Recovery

Sample units are expressed in %

	Leeder ID	2012014577	2012014578	2012014579	2012014580	2012014581	2012014582	2012014583
	Client ID	Q8145-05	Q8145-06	Q8145-01	Q8145-02	Q8145-03	Q8145-04	Q8145-07
Analyte Name	PQL							
Dibromofluoromethane		107	87	106	86	102	87	105
12-Dichloroethane-d4		109	98	107	103	108	99	110
Toluene-d8		103	104	102	103	103	103	103
p-Bromofluorobenzene		105	106	105	104	104	104	105

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014584	2012014585
	Client ID	Q8145-05	Method
Analyte Name	PQL	Duplicate	Blank
Dibromofluoromethane		101	108
12-Dichloroethane-d4		108	108
Toluene-d8		103	104
p-Bromofluorobenzene		105	106





Report N°: M121225

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012015372	2012015373
	Client ID	Q8145-06	Q8145-06
Analyte Name	PQL	Spike	Spike Dup
Total C6-C36		122	129

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014588	2012014589
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Benzene		119	113
Bromodichloromethane		99	96
Carbon tetrachloride		117	115
Chlorobenzene		122	116
Dibromochloromethane		95	92
1,2-Dichlorobenzene		116	109
1,3-Dichlorobenzene		106	98
1,4-Dichlorobenzene		107	102
1,2-Dichloroethane		110	108
1,1-Dichloroethane		122	117





Report N°: M121225

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014588	2012014589
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
trans-1,2-Dichloroethene		117	115
Dichloromethane		117	115
1,2-Dichloropropane		120	112
Ethylbenzene		110	104
1,1,2,2-Tetrachloroethane		98	90
Tetrachloroethene		114	108
Toluene		112	107
Tribromomethane		92	87
1,1,1-Trichloroethane		111	107

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014588	2012014589
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		111	106
Trichloroethene		117	111
Trichloromethane		119	114




Report N°: M121225

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014588	2012014589
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		117	120
Dibromochloromethane		110	112
Tribromomethane		114	116

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

	Leeder ID	2012014586	2012014587
	Client ID	Q8145-05	Q8145-05
Analyte Name	PQL	Spike	Spike Dup
Aluminium		87	85
Arsenic		112	113
Cadmium		108	108
Chromium		102	102
Iron		111	111
Lead		96	97
Manganese		102	102
Mercury		85	86
Nickel		101	101
Zinc		82	81





Report N°: M121225

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014588	2012014589
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		100	105
12-Dichloroethane-d4		94	98
Toluene-d8		97	98
p-Bromofluorobenzene		94	94

Report N°: M121225



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

	CHAIN OF CUSTO	DY RECORD	ANALYS	IS RI	EQUI	EST		Q	81	45	pageof
Golder	Project Number:	13692			Laborato	ory Name	Le	ed	er	Co	nsulting
1 Havelock Street					Address	it s	14	s R	ectlo	ind	Or 3
Telehone +61 8 9213 7600 Fax +61 8 92	13 7611 Golder Contact:	Golder Email /	Address:	m.au	Telepho	ne/Fax:	741	988	Conta	ict: (yndall
Address where reports should be sent to	Sarah Vieille	t Svieil	let				Analys	ses Requ	ired		
West Perth, WA 6872 Telephone (61 8) 9213 7600		<u>ka</u>	Ø		10C						
Fax (61 8) 9213 7611	Phone Fax		ntainer	R	5		2				
Sample Control Number (SCN	Sample Date Matrix Sampled		r of Co	107							
	(over) (D/M/Y)		Numbe	502	10H					HSUSH	Remarks (over)
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- 03											Nº BI
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- 06			7								
<u>N - 07</u>	VV				V						
- 08					+						2
- 10											
- 11							-				
- 12											
Sampler's Signature:	Relinquished by: Signature	Company Da	te 196/1	2 ^{Ti}	me	l L	Received	by: Sign	ature A	Com	ipany Lodg Consult
Sample Storage (°C)	Relinquished by: Signature	Company Da	te (L)	Ti	me	I	Received	by: Sign	ature	Com	ipany
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WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report

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Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

To:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	21/06/2012
Email	svieillet@golder.com.au	Ref:	M121241

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No .:	117643092
Our Reference Number:	M121241
Date Received:	21-Jun-2012
Estimated date of report:	28-Jun-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage

- All aqueous samples are stored for two weeks after reporting.

- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

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Form - 009

Date of Issue 23/05/12





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

29-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121241

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES: Seven samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

21-Jun-2012

21-Jun-2012

RESULTS: Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014711	2012014712	2012014713	2012014714	2012014715	2012014716	2012014717
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-04	Q9501-05	Q9501-06	Q9501-07
Analyte Name	PQL							
Benzene	0.001	0.016	0.015	nd	nd	0.003	nd	nd
Bromobenzene	0.001	nd						
Bromochloromethane	0.001	nd						
Bromodichloromethane	0.001	nd						
Bromomethane	0.001	nd	nd	0.013	nd	nd	nd	nd
n-Butylbenzene	0.001	0.004	0.004	nd	nd	nd	nd	nd
s-Butylbenzene	0.001	0.002	0.002	nd	nd	nd	nd	nd
t-Butylbenzene	0.001	nd						
Carbon tetrachloride	0.001	nd						
Chlorobenzene	0.001	0.009	0.008	nd	nd	nd	nd	nd
Chloroethane	0.001	0.009	0.008	nd	nd	nd	nd	nd
Chloromethane	0.001	nd	nd	nd	nd	0.001	nd	nd
2-Chlorotoluene	0.001	nd						
4-Chlorotoluene	0.001	nd						
Dibromochloromethane	0.001	nd						
1,2-Dibromo-3-chloropropane	0.001	nd						
1,2-Dibromoethane	0.001	nd						
Dibromomethane	0.001	nd						
1,2-Dichlorobenzene	0.001	0.004	0.004	nd	nd	0.004	nd	nd
1,3-Dichlorobenzene	0.001	nd						
1,4-Dichlorobenzene	0.001	nd						
Dichlorodifluoromethane	0.001	nd						
1,2-Dichloroethane	0.001	0.003	0.003	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.001	0.031	0.030	nd	nd	0.022	nd	nd





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014711	2012014712	2012014713	2012014714	2012014715	2012014716	2012014717
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-04	Q9501-05	Q9501-06	Q9501-07
Analyte Name	PQL							
1,1-Dichloroethene	0.001	0.001	0.001	nd	nd	0.002	nd	nd
cis-1,2-Dichloroethene	0.001	1.5	1.5	0.002	nd	0.14	nd	nd
trans-1,2-Dichloroethene	0.001	0.002	0.001	nd	nd	nd	nd	nd
Dichloromethane	0.01	nd						
1,2-Dichloropropane	0.001	nd						
1,3-Dichloropropane	0.001	nd						
2,2-Dichloropropane	0.001	nd						
1,1-Dichloropropene	0.001	nd						
cis-1,3-Dichloropropene	0.001	nd						
trans-1,3-Dichloropropene	0.001	nd						
Ethylbenzene	0.001	0.89	0.88	nd	nd	0.33	nd	nd
Hexachloro-1,3-butadiene	0.001	nd						
Isopropylbenzene	0.001	0.023	0.021	nd	nd	0.003	nd	nd
p-Isopropyltoluene	0.001	0.037	0.033	nd	nd	0.005	nd	nd
Naphthalene	0.001	0.049	0.045	nd	nd	0.006	nd	nd
Propylbenzene	0.001	0.041	0.036	nd	nd	0.004	nd	nd
Styrene	0.001	0.004	0.004	nd	nd	0.012	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd						
Tetrachloroethene	0.001	nd						
1,1,1,2-Tetrachloroethane	0.001	nd						
Toluene	0.001	0.019	0.018	nd	nd	0.36	nd	nd
Tribromomethane	0.001	nd						
1,2,3-Trichlorobenzene	0.001	nd						
1,2,4-Trichlorobenzene	0.001	nd						
1,1,1-Trichloroethane	0.001	nd						





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014711	2012014712	2012014713	2012014714	2012014715	2012014716	2012014717
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-04	Q9501-05	Q9501-06	Q9501-07
Analyte Name	PQL							
1,1,2-Trichloroethane	0.001	nd						
Trichloroethene	0.001	nd						
Trichlorofluoromethane	0.001	nd	nd	nd	nd	0.001	nd	nd
Trichloromethane	0.001	nd	nd	nd	nd	0.007	nd	nd
1,2,3-Trichloropropane	0.001	nd						
1,2,4-Trimethylbenzene	0.001	0.21	0.18	nd	nd	0.079	nd	nd
1,3,5-Trimethylbenzene	0.001	0.074	0.066	nd	nd	0.054	nd	nd
Vinyl Chloride	0.001	0.003	0.003	nd	nd	0.20	nd	nd
m&p-Xylenes	0.001	0.43	0.42	nd	nd	0.37	nd	nd
o-Xylene	0.001	0.059	0.051	nd	nd	0.61	nd	nd





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
Benzene	0.001	0.015	nd
Bromobenzene	0.001	nd	nd
Bromochloromethane	0.001	nd	nd
Bromodichloromethane	0.001	nd	nd
Bromomethane	0.001	nd	nd
n-Butylbenzene	0.001	0.004	nd
s-Butylbenzene	0.001	0.002	nd
t-Butylbenzene	0.001	nd	nd
Carbon tetrachloride	0.001	nd	nd
Chlorobenzene	0.001	0.009	nd
Chloroethane	0.001	0.008	nd
Chloromethane	0.001	nd	nd
2-Chlorotoluene	0.001	nd	nd
4-Chlorotoluene	0.001	nd	nd
Dibromochloromethane	0.001	nd	nd
1,2-Dibromo-3-chloropropane	0.001	nd	nd
1,2-Dibromoethane	0.001	nd	nd
Dibromomethane	0.001	nd	nd
1,2-Dichlorobenzene	0.001	0.004	nd
1,3-Dichlorobenzene	0.001	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd
Dichlorodifluoromethane	0.001	nd	nd
1,2-Dichloroethane	0.001	0.003	nd
1,1-Dichloroethane	0.001	0.031	nd





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
1,1-Dichloroethene	0.001	0.001	nd
cis-1,2-Dichloroethene	0.001	1.5	nd
trans-1,2-Dichloroethene	0.001	nd	nd
Dichloromethane	0.01	nd	nd
1,2-Dichloropropane	0.001	nd	nd
1,3-Dichloropropane	0.001	nd	nd
2,2-Dichloropropane	0.001	nd	nd
1,1-Dichloropropene	0.001	nd	nd
cis-1,3-Dichloropropene	0.001	nd	nd
trans-1,3-Dichloropropene	0.001	nd	nd
Ethylbenzene	0.001	0.89	nd
Hexachloro-1,3-butadiene	0.001	nd	nd
Isopropylbenzene	0.001	0.022	nd
p-Isopropyltoluene	0.001	0.036	nd
Naphthalene	0.001	0.048	nd
Propylbenzene	0.001	0.039	nd
Styrene	0.001	0.004	nd
1,1,2,2-Tetrachloroethane	0.001	nd	nd
Tetrachloroethene	0.001	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd	nd
Toluene	0.001	0.019	nd
Tribromomethane	0.001	nd	nd
1,2,3-Trichlorobenzene	0.001	nd	nd
1,2,4-Trichlorobenzene	0.001	nd	nd
1,1,1-Trichloroethane	0.001	nd	nd





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd	nd
Trichloroethene	0.001	nd	nd
Trichlorofluoromethane	0.001	nd	nd
Trichloromethane	0.001	nd	nd
1,2,3-Trichloropropane	0.001	nd	nd
1,2,4-Trimethylbenzene	0.001	0.20	nd
1,3,5-Trimethylbenzene	0.001	0.071	nd
Vinyl Chloride	0.001	0.003	nd
m&p-Xylenes	0.001	0.44	nd
o-Xylene	0.001	0.052	nd





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014711	2012014712	2012014713	2012014714	2012014715	2012014716
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-04	Q9501-05	Q9501-06
Analyte Name	PQL						
Bromobenzene	0.1	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethane	0.1	nd	nd	nd	nd	nd	nd
Bromoethyne	0.1	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd	nd	nd	nd	nd
Dibromoethane	0.1	nd	nd	nd	nd	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd	nd	nd	1.5	nd
trans-1,2-Dibromoethene	0.1	nd	nd	nd	nd	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd	nd	nd	1.5	nd
Dibromomethane	0.1	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethane	0.1	nd	nd	nd	nd	nd	nd
Tetrabromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromoethane	0.1	nd	nd	nd	nd	nd	nd
Tribromoethene	0.1	nd	nd	nd	nd	nd	nd
Tribromomethane	0.1	nd	nd	nd	nd	nd	nd
Vinyl bromide	0.1	nd	nd	nd	nd	64	nd





Report N°: M121241

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
Bromobenzene	0.1	nd	nd
Bromochloromethane	0.1	nd	nd
Bromodichloromethane	0.1	nd	nd
Bromoethane	0.1	nd	nd
Bromoethyne	0.1	nd	nd
Dibromochloromethane	0.1	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd
Dibromoethane	0.1	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd
Dibromomethane	0.1	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd
Tetrabromoethane	0.1	nd	nd
Tetrabromoethene	0.1	nd	nd
Tribromoethane	0.1	nd	nd
Tribromoethene	0.1	nd	nd
Tribromomethane	0.1	nd	nd
Vinyl bromide	0.1	nd	nd





Report N°: M121241

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014711	2012014712	2012014713	2012014714	2012014715
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-04	Q9501-05
Analyte Name	PQL					
C6-C9	0.01	2.9	2.5	nd	nd	3.5
C10-C14	0.01	4.1	4.0	nd	nd	5.2
C15-C28	0.05	0.23	0.40	nd	nd	0.72
C29-C36	0.05	nd	nd	nd	nd	nd
Total C6-C36	0.05	7.2	6.9	nd	nd	9.5

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
C6-C9	0.01	2.6	nd
C10-C14	0.01	3.8	nd
C15-C28	0.05	0.19	nd
C29-C36	0.05	nd	nd
Total C6-C36	0.05	6.5	nd





Report N°: M121241

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

Sample units are expressed in mg/L

	Leeder ID	2012014717
	Client ID	Q9501-07
Analyte Name	PQL	
C6-C9 (Purge & Trap)	0.01	nd

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012014720
	Client ID	Method
Analyte Name	PQL	Blank
C6-C9 (Purge & Trap)	0.01	nd





Report N°: M121241

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Sample units are expressed in mg/L

	Leeder ID	2012014711	2012014712	2012014713	2012014715
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-05
Analyte Name	PQL				
Aluminium	0.001	0.005	0.005	0.003	nd
Arsenic	0.0005	0.017	0.019	nd	0.0022
Cadmium	0.0002	nd	nd	nd	nd
Chromium	0.001	nd	nd	0.002	nd
Iron	0.001	7.7	8.1	0.010	19
Lead	0.001	nd	nd	nd	nd
Manganese	0.001	0.094	0.099	0.070	0.029
Mercury	0.00005	nd	nd	nd	nd
Nickel	0.001	0.006	0.007	0.001	0.003
Zinc	0.001	0.009	0.005	0.006	0.003

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
Aluminium	0.001	0.005	nd
Arsenic	0.0005	0.016	nd
Cadmium	0.0002	nd	nd
Chromium	0.001	nd	nd
Iron	0.001	7.8	nd
Lead	0.001	nd	nd
Manganese	0.001	0.096	nd
Mercury	0.00005	nd	nd
Nickel	0.001	0.006	nd
Zinc	0.001	0.009	nd





Report N°: M121241

Matrix: Water

Method: MA-1400.WW.10 Total Metals

	Leeder ID	2012014714	2012014716
	Client ID	Q9501-04	Q9501-06
Analyte Name	PQL		
Total Aluminium	0.001	0.013	0.63
Total Arsenic	0.0005	nd	nd
Total Cadmium	0.0002	nd	nd
Total Chromium	0.001	nd	nd
Total Iron	0.001	0.009	1.2
Total Lead	0.001	nd	0.001
Total Manganese	0.001	nd	0.17
Total Mercury	0.00005	nd	nd
Total Nickel	0.001	nd	0.001
Total Zinc	0.001	0.019	0.021





Report N°: M121241

Matrix: Water

Method: MA-1400.WW.10 Total Metals

Sample units are expressed in mg/L

	Leeder ID	2012014719	2012014720
	Client ID	Q9501-06	Method
Analyte Name	PQL	Duplicate	Blank
Total Aluminium	0.001	0.60	nd
Total Arsenic	0.0005	nd	nd
Total Cadmium	0.0002	nd	nd
Total Chromium	0.001	nd	nd
Total Iron	0.001	1.3	nd
Total Lead	0.001	0.001	nd
Total Manganese	0.001	1.8	nd
Total Mercury	0.00005	nd	nd
Total Nickel	0.001	0.001	nd
Total Zinc	0.001	0.025	nd

Matrix: Water

Method: MA-1146.WW.01 Nitrogens

	Leeder ID	2012014716
	Client ID	Q9501-06
Analyte Name	PQL	
Nitrate as N	0.01	0.11





Report N°: M121241

Matrix: Water

Method: MA-1146.WW.01 Nitrogens

Sample units are expressed in mg/L

	Leeder ID	2012014719	2012014720
	Client ID	Q9501-06	Method
Analyte Name	PQL	Duplicate	Blank
Nitrate as N	0.01	0.11	nd

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014711	2012014712	2012014713	2012014714	2012014715	2012014716	2012014717
	Client ID	Q9501-01	Q9501-02	Q9501-03	Q9501-04	Q9501-05	Q9501-06	Q9501-07
Analyte Name	PQL							
Dibromofluoromethane		108	106	78	106	110	105	107
12-Dichloroethane-d4		109	104	97	103	107	104	107
Toluene-d8		99	99	99	98	99	98	99
p-Bromofluorobenzene		103	99	100	99	100	100	101





Report N°: M121241

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014718	2012014720
	Client ID	Q9501-01	Method
Analyte Name	PQL	Duplicate	Blank
Dibromofluoromethane		107	110
12-Dichloroethane-d4		107	110
Toluene-d8		99	100
p-Bromofluorobenzene		100	101





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014725	2012014726
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Benzene		118	116
Bromodichloromethane		90	103
Chlorobenzene		126	127
Dibromochloromethane		93	101
1,2-Dichlorobenzene		126	125
1,3-Dichlorobenzene		117	117
1,4-Dichlorobenzene		116	118
1,2-Dichloroethane		97	112

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014725	2012014726
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
trans-1,2-Dichloroethene		114	114
Dichloromethane		112	114
1,2-Dichloropropane		120	118
Ethylbenzene		113	114
1,1,2,2-Tetrachloroethane		112	114
Tetrachloroethene		116	115
Toluene		117	114
Tribromomethane		98	103
1,1,1-Trichloroethane		95	110





Report N°: M121241

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014725	2012014726
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		117	117
Trichloroethene		117	117
Trichloromethane		111	119

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014725	2012014726
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		116	105
Dibromochloromethane		113	104
Tribromomethane		120	112





Report N°: M121241

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012015239
	Client ID	Q9501-02
Analyte Name	PQL	Spike
Total C6-C36		107

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012015240
	Client ID	Q9501-02
Analyte Name	PQL	Spike Dup
Total C6-C36		110





Report N°: M121241

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014721	2012014722
	Client ID	Q9501-01	Q9501-01
Analyte Name	PQL	Spike	Spike Dup
Aluminium		78	75
Arsenic		116	110
Cadmium		107	104
Chromium		103	100
Iron		U	U
Lead		96	93
Manganese		105	101
Mercury		86	87
Nickel		105	102
Zinc		108	106

Matrix: Water

Method: MA-1400.WW.10 Total Metals

	Leeder ID	2012014723	2012014724
	Client ID	Q9501-06	Q9501-06
Analyte Name	PQL	Spike	Spike Dup
Total Aluminium		78	75
Total Arsenic		116	110
Total Cadmium		107	104
Total Chromium		103	100
Total Iron		U	U
Total Lead		96	93
Total Manganese		105	101
Total Mercury		86	87
Total Nickel		105	102
Total Zinc		108	106





Report N°: M121241

Matrix: Water

Method: MA-1146.WW.01 Nitrogens

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014723	2012014724
	Client ID	Q9501-06	Q9501-06
Analyte Name	PQL	Spike	Spike Dup
Nitrate as N		123	126

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014725	2012014726
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		92	100
12-Dichloroethane-d4		86	95
Toluene-d8		99	96
p-Bromofluorobenzene		96	97

Report N°: M121241



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

	CHAIN OF CUSTO	DY RECORD/A	NALY	SIS R	EQU	ES	Γ	(2 9	501	page_of_	
Golder	Project Number: 1176 4	3092		land a	Labora	atory Na	ime: Lecd	en (Cons	ette]
1 Havelock Street West Perth, WA 6005 Australia					Addres	SS: UM	it 4/5	18	Ree	Uan	200	
Telehone +61 8 9213 7600 Fax +61 8 921	3 7611 Golder Contact Mundle	Golder Email Addr	ess: @golder.c	com.au	Teleph U3	one/Fa	198	3	С	ontact:	dall	· il anne
Address where reports should be sent to	Salah Viulet	Zaieulle					Analy	ses Re	quired	gerter	1	
West Perth, WA 6872 Telephone (61 8) 9213 7600	0434 511 366		Ø	-							And	
Fax (61 8) 9213 7611	Phone Fax		ntainer		05							a series and and a series of the series of t
Sample Control Number (SCN	Sample Date Matrix Sampled		of Col	2	2 3	5					a starter	
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Sample torage (°C)	Relinquished by: Signature	Company Date		Т	ime	-	Received	by: Sig	inature	Co	mpany	
Comments: Crote	Method of Shipment:	Waybill No:		Receive	ed for Lab	by:	K	Date	illiz		Time 10arh	
002 1205171151	Shipped by:	Shipment Condition: Seal intact:		Temp (C) Co	oler ope	ened by:	Date	9		Time	

WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 540 864 910 09

Sample Receipt Acknowledgement

To:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	22/06/2012
Email	svieillet@golder.com.au	Ref:	M121248

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No .:	117643092				
Our Reference Number:	M121248				
Date Received:	22-Jun-2012				
Estimated date of report:	29-Jun-2012				

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage - A

- All aqueous samples are stored for two weeks after reporting.
- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

Melbourne Tel: +613 9874 1988 Fax: +613 9874 1933 Sydney Tel: +612 9959 2351 Fax: +612 8212 5889 Adelaide Tel: +618 8377 4444 Fax: +618 8377 4399 Brisbane Tel: +617 3899 2311 Fax: +617 3899 2322

Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com

Form - 009

Date of Issue 23/05/12





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

29-Jun-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121248

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Eight samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

22-Jun-2012

22-Jun-2012

RESULTS: Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

Adam Atkinson Laboratory Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014746	2012014747	2012014748	2012014749	2012014750	2012014751	2012014752
	Client ID	Q9502-01	Q9502-02	Q9502-03	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL							
Benzene	0.001	nd						
Bromobenzene	0.001	nd						
Bromochloromethane	0.001	nd						
Bromodichloromethane	0.001	nd						
Bromomethane	0.001	nd						
n-Butylbenzene	0.001	nd						
s-Butylbenzene	0.001	nd						
t-Butylbenzene	0.001	nd						
Carbon tetrachloride	0.001	nd						
Chlorobenzene	0.001	nd						
Chloroethane	0.001	nd						
Chloromethane	0.001	nd						
2-Chlorotoluene	0.001	nd						
4-Chlorotoluene	0.001	nd						
Dibromochloromethane	0.001	nd						
1,2-Dibromo-3-chloropropane	0.001	nd						
1,2-Dibromoethane	0.001	nd						
Dibromomethane	0.001	nd						
1,2-Dichlorobenzene	0.001	nd						
1,3-Dichlorobenzene	0.001	nd						
1,4-Dichlorobenzene	0.001	nd						
Dichlorodifluoromethane	0.001	nd						
1,2-Dichloroethane	0.001	nd						
1,1-Dichloroethane	0.001	nd						





Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014746	2012014747	2012014748	2012014749	2012014750	2012014751	2012014752
	Client ID	Q9502-01	Q9502-02	Q9502-03	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL							
1,1-Dichloroethene	0.001	nd						
cis-1,2-Dichloroethene	0.001	nd	nd	nd	nd	0.002	0.003	nd
trans-1,2-Dichloroethene	0.001	nd						
Dichloromethane	0.01	nd						
1,2-Dichloropropane	0.001	nd						
1,3-Dichloropropane	0.001	nd						
2,2-Dichloropropane	0.001	nd						
1,1-Dichloropropene	0.001	nd						
cis-1,3-Dichloropropene	0.001	nd						
trans-1,3-Dichloropropene	0.001	nd						
Ethylbenzene	0.001	nd						
Hexachloro-1,3-butadiene	0.001	nd						
Isopropylbenzene	0.001	nd						
p-Isopropyltoluene	0.001	nd						
Naphthalene	0.001	nd						
Propylbenzene	0.001	nd						
Styrene	0.001	nd						
1,1,2,2-Tetrachloroethane	0.001	nd						
Tetrachloroethene	0.001	nd						
1,1,1,2-Tetrachloroethane	0.001	nd						
Toluene	0.001	nd						
Tribromomethane	0.001	nd						
1,2,3-Trichlorobenzene	0.001	nd						
1,2,4-Trichlorobenzene	0.001	nd						
1,1,1-Trichloroethane	0.001	nd						





Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014746	2012014747	2012014748	2012014749	2012014750	2012014751	2012014752
	Client ID	Q9502-01	Q9502-02	Q9502-03	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL							
1,1,2-Trichloroethane	0.001	nd						
Trichloroethene	0.001	nd	nd	nd	nd	nd	0.011	0.002
Trichlorofluoromethane	0.001	nd						
Trichloromethane	0.001	nd						
1,2,3-Trichloropropane	0.001	nd						
1,2,4-Trimethylbenzene	0.001	nd						
1,3,5-Trimethylbenzene	0.001	nd						
Vinyl Chloride	0.001	nd	nd	nd	nd	nd	0.002	nd
m&p-Xylenes	0.001	nd						
o-Xylene	0.001	nd						





Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014753	2012014754	2012014755
	Client ID	Q9502-08	Q9502-01	Method
Analyte Name	PQL		Duplicate	Blank
Benzene	0.001	nd	nd	nd
Bromobenzene	0.001	nd	nd	nd
Bromochloromethane	0.001	nd	nd	nd
Bromodichloromethane	0.001	nd	nd	nd
Bromomethane	0.001	nd	nd	nd
n-Butylbenzene	0.001	nd	nd	nd
s-Butylbenzene	0.001	nd	nd	nd
t-Butylbenzene	0.001	nd	nd	nd
Carbon tetrachloride	0.001	nd	nd	nd
Chlorobenzene	0.001	nd	nd	nd
Chloroethane	0.001	nd	nd	nd
Chloromethane	0.001	nd	nd	nd
2-Chlorotoluene	0.001	nd	nd	nd
4-Chlorotoluene	0.001	nd	nd	nd
Dibromochloromethane	0.001	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.001	nd	nd	nd
1,2-Dibromoethane	0.001	nd	nd	nd
Dibromomethane	0.001	nd	nd	nd
1,2-Dichlorobenzene	0.001	nd	nd	nd
1,3-Dichlorobenzene	0.001	nd	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd	nd
Dichlorodifluoromethane	0.001	nd	nd	nd
1,2-Dichloroethane	0.001	nd	nd	nd
1,1-Dichloroethane	0.001	nd	nd	nd




Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014753	2012014754	2012014755
	Client ID	Q9502-08	Q9502-01	Method
Analyte Name	PQL		Duplicate	Blank
1,1-Dichloroethene	0.001	nd	nd	nd
cis-1,2-Dichloroethene	0.001	nd	nd	nd
trans-1,2-Dichloroethene	0.001	nd	nd	nd
Dichloromethane	0.01	nd	nd	nd
1,2-Dichloropropane	0.001	nd	nd	nd
1,3-Dichloropropane	0.001	nd	nd	nd
2,2-Dichloropropane	0.001	nd	nd	nd
1,1-Dichloropropene	0.001	nd	nd	nd
cis-1,3-Dichloropropene	0.001	nd	nd	nd
trans-1,3-Dichloropropene	0.001	nd	nd	nd
Ethylbenzene	0.001	nd	nd	nd
Hexachloro-1,3-butadiene	0.001	nd	nd	nd
Isopropylbenzene	0.001	nd	nd	nd
p-Isopropyltoluene	0.001	nd	nd	nd
Naphthalene	0.001	nd	nd	nd
Propylbenzene	0.001	nd	nd	nd
Styrene	0.001	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd	nd	nd
Tetrachloroethene	0.001	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.001	nd	nd	nd
Toluene	0.001	nd	nd	nd
Tribromomethane	0.001	nd	nd	nd
1,2,3-Trichlorobenzene	0.001	nd	nd	nd
1,2,4-Trichlorobenzene	0.001	nd	nd	nd
1,1,1-Trichloroethane	0.001	nd	nd	nd





Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014753	2012014754	2012014755
	Client ID	Q9502-08	Q9502-01	Method
Analyte Name	PQL		Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd	nd	nd
Trichloroethene	0.001	nd	nd	nd
Trichlorofluoromethane	0.001	nd	nd	nd
Trichloromethane	0.001	nd	nd	nd
1,2,3-Trichloropropane	0.001	nd	nd	nd
1,2,4-Trimethylbenzene	0.001	nd	nd	nd
1,3,5-Trimethylbenzene	0.001	nd	nd	nd
Vinyl Chloride	0.001	nd	nd	nd
m&p-Xylenes	0.001	nd	nd	nd
o-Xylene	0.001	nd	nd	nd





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014746	2012014747	2012014748	2012014749	2012014750	2012014751	2012014752
	Client ID	Q9502-01	Q9502-02	Q9502-03	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL							
Bromobenzene	0.1	nd						
Bromochloromethane	0.1	nd						
Bromodichloromethane	0.1	nd						
Bromoethane	0.1	nd						
Bromoethyne	0.1	nd						
Dibromochloromethane	0.1	nd						
1,2-Dibromo-3-chloropropane	0.1	nd						
Dibromoethane	0.1	nd						
cis-1,2-Dibromoethene	0.1	nd						
trans-1,2-Dibromoethene	0.1	nd						
1,2-Dibromoethene(c,t)	0.1	nd						
Dibromomethane	0.1	nd						
1,1,2,2-Tetrabromoethane	0.1	nd						
Tetrabromoethane	0.1	nd						
Tetrabromoethene	0.1	nd						
Tribromoethane	0.1	nd						
Tribromoethene	0.1	nd						
Tribromomethane	0.1	nd						
Vinyl bromide	0.1	nd						





Report N°: M121248

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014754	2012014755
	Client ID	Q9502-01	Method
Analyte Name	PQL	Duplicate	Blank
Bromobenzene	0.1	nd	nd
Bromochloromethane	0.1	nd	nd
Bromodichloromethane	0.1	nd	nd
Bromoethane	0.1	nd	nd
Bromoethyne	0.1	nd	nd
Dibromochloromethane	0.1	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd
Dibromoethane	0.1	nd	nd
cis-1,2-Dibromoethene	0.1	nd	nd
trans-1,2-Dibromoethene	0.1	nd	nd
1,2-Dibromoethene(c,t)	0.1	nd	nd
Dibromomethane	0.1	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd
Tetrabromoethane	0.1	nd	nd
Tetrabromoethene	0.1	nd	nd
Tribromoethane	0.1	nd	nd
Tribromoethene	0.1	nd	nd
Tribromomethane	0.1	nd	nd
Vinyl bromide	0.1	nd	nd





Report N°: M121248

Matrix: Water

Method: MA-1400.WW.10 Total Metals

Sample units are expressed in mg/L

	Leeder ID	2012014746	2012014747	2012014748
	Client ID	Q9502-01	Q9502-02	Q9502-03
Analyte Name	PQL			
Total Aluminium	0.001	0.50	0.53	0.52
Total Arsenic	0.0005	nd	nd	nd
Total Cadmium	0.0002	nd	nd	nd
Total Chromium	0.001	nd	0.001	0.001
Total Iron	0.001	0.80	0.81	0.82
Total Lead	0.001	0.001	0.001	0.001
Total Manganese	0.001	0.083	0.079	0.082
Total Mercury	0.00005	nd	nd	nd
Total Nickel	0.001	nd	0.001	0.001
Total Zinc	0.001	0.011	0.008	0.008

Matrix: Water

Method: MA-1400.WW.10 Total Metals

	Leeder ID	2012014754	2012014755
	Client ID	Q9502-01	Method
Analyte Name	PQL	Duplicate	Blank
Total Aluminium	0.001	0.53	nd
Total Arsenic	0.0005	nd	nd
Total Cadmium	0.0002	nd	nd
Total Chromium	0.001	nd	nd
Total Iron	0.001	0.81	nd
Total Lead	0.001	0.001	nd
Total Manganese	0.001	0.083	nd
Total Mercury	0.00005	nd	nd
Total Nickel	0.001	nd	nd
Total Zinc	0.001	0.012	nd





Report N°: M121248

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

			2012014750	2012014751	2012014752
	Leeder ID	2012014749	2012014730	2012014731	2012014732
	Client ID	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL				
Aluminium	0.001	0.004	nd	nd	nd
Arsenic	0.0005	nd	nd	nd	nd
Cadmium	0.0002	nd	nd	nd	nd
Chromium	0.001	nd	nd	nd	nd
Iron	0.001	14	2.0	0.74	0.54
Lead	0.001	nd	nd	nd	nd
Manganese	0.001	0.22	0.13	0.070	0.11
Mercury	0.00005	nd	nd	nd	nd
Nickel	0.001	nd	nd	nd	nd
Zinc	0.001	0.003	nd	nd	nd





Report N°: M121248

Matrix: Water

Method: MA-1400.WW.09 Dissolved Metals

Sample units are expressed in mg/L

	Leeder ID	2012014755
	Client ID	Method
Analyte Name	PQL	Blank
Aluminium	0.001	nd
Arsenic	0.0005	nd
Cadmium	0.0002	nd
Chromium	0.001	nd
Iron	0.001	nd
Lead	0.001	nd
Manganese	0.001	nd
Mercury	0.00005	nd
Nickel	0.001	nd
Zinc	0.001	nd

Matrix: Water

Method: MA-1146.WW.01 Nitrogens

	Leeder ID	2012014746	2012014747	2012014748	2012014749	2012014750	2012014751	2012014752
	Client ID	Q9502-01	Q9502-02	Q9502-03	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL							
Nitrate as N	0.01	0.22	0.22	0.21	nd	nd	nd	nd





Report N°: M121248

Matrix: Water

Method: MA-1146.WW.01 Nitrogens

Sample units are expressed in mg/L

	Leeder ID	2012014754	2012014755
	Client ID	Q9502-01	Method
Analyte Name	PQL	Duplicate	Blank
Nitrate as N	0.01	0.21	nd

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012014753	2012014755
	Client ID	Q9502-08	Method
Analyte Name	PQL		Blank
C6-C9 (Purge & Trap)	0.01	nd	nd





Report N°: M121248

Matrix: Water

Method: VOC Surrogate Recovery

Sample units are expressed in %

	Leeder ID	2012014746	2012014747	2012014748	2012014749	2012014750	2012014751	2012014752
	Client ID	Q9502-01	Q9502-02	Q9502-03	Q9502-04	Q9502-05	Q9502-06	Q9502-07
Analyte Name	PQL							
Dibromofluoromethane		106	108	107	110	108	84	88
12-Dichloroethane-d4		106	113	113	117	116	105	106
Toluene-d8		103	104	105	105	105	105	105
p-Bromofluorobenzene		103	104	104	105	105	102	104

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID 201201475			2012014755		
	Client ID	Q9502-08	Q9502-01	Method		
Analyte Name	PQL		Duplicate	Blank		
Dibromofluoromethane		112	108	105		
12-Dichloroethane-d4		116	111	103		
Toluene-d8		104	104	103		
p-Bromofluorobenzene		105	105	103		





Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014758	2012014759
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Benzene		121	118
Bromodichloromethane		93	77
Chlorobenzene		120	116
Dibromochloromethane		86	76
1,2-Dichlorobenzene		114	112
1,3-Dichlorobenzene		110	107
1,4-Dichlorobenzene		100	97
1,2-Dichloroethane		109	95

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012014758	2012014759
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1-Dichloroethene		89	103
trans-1,2-Dichloroethene		120	117
Dichloromethane		114	111
1,2-Dichloropropane		121	120
Ethylbenzene		109	107
1,1,2,2-Tetrachloroethane		99	99
Tetrachloroethene		111	106
Toluene		109	108
Tribromomethane		86	81
1,1,1-Trichloroethane		103	88





Report N°: M121248

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014758	2012014759
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		106	104
Trichloroethene		112	107
Trichloromethane		118	108

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012014758	2012014759
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		93	76
Dibromochloromethane		86	77
Tribromomethane		85	81





Report N°: M121248

Matrix: Water

Method: MA-1400.WW.10 Total Metals

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012014756	2012014757
	Client ID	Q9502-01	Q9502-01
Analyte Name	PQL	Spike	Spike Dup
Total Aluminium		77	71
Total Arsenic		111	106
Total Cadmium		106	102
Total Chromium		102	96
Total Iron		U	U
Total Lead		98	92
Total Manganese		103	94
Total Mercury		101	94
Total Nickel		102	95
Total Zinc		85	79

Matrix: Water

Method: MA-1146.WW.01 Nitrogens

	Leeder ID	2012014756	2012014757
	Client ID	Q9502-01	Q9502-01
Analyte Name	PQL	Spike	Spike Dup
Nitrate as N		108	120





Report N°: M121248

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012014758	2012014759
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		103	94
12-Dichloroethane-d4		102	90
Toluene-d8		104	105
p-Bromofluorobenzene		102	101

Report N°: M121248



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

<u>A</u>	CHAIN OF CUSTOD	Y RECORI	D/ANALY	SIS F	REQUI	EST		Q	950	2	pageof
Golder	Project Number:	643092	*		Laborat	ory Nam	e: Rat	Un Co	nou	lting	ξ
Associates			1.0		Address	Unit	4-5/1	s Red	land	Dr:	2
West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 9213	3 7611 Golder Contact:	Golder Ema	ail Address: 0 @golder	.com.au	Telepho	ne/Fax:	4 15	88	Contact:	ndal	l
Address where reports should be sent to	Swap Vieillot	SVICA	set 1				Analyse	s Required		1	
PO Box 1914 C 4 West Perth, WA 6672 Telephone (61 8) 9213 7600 Fax (61 8) 9213 7611	Other 3669 Phone Fax	4	Containers	~	-Ca VOK	C.	xe 200	JAWP R			
Sample Control Number (SCN	Sample Date Matrix Sampled (over) (D/M/Y)		Number of	Sute	TPH C	Ø					Remarks (over)
Q9502-01	21/1/12		E							E To	stalmetale
- 02			6	1						<- 1	iotalmete
- 03			6							6- 70	stal metals
- 04											
- 05			6	V /							solved retails.
- 06			0	1 V						-	
- 07											
- 09											
- 10				5 							
- 11						-					
- 12											
Sampler's Signature	Relinquished bic Signature	Company	Date 21 6/12		Time		Received	by: Signatu	re M	Company	
Sample Storage (°C)	Relinquished by: Signature	Company	Date		Time		Received	by: Signatu	re	Company	y
Comments:	Method of Shipment:	Waybill No:		Rec	eived for La	b by:	le la compañía de la	Date 22/L	10	Tir	me
QUOTE QQ2120517WB)	Shipped by:	Shipment Condition Seal intact:		Tem	ap (°C) Co	coler ope	ened by:	Date		Tir	me
	WHITE: Golder Copy YELI	LOW: Lab Copy	PINK: Lab F	eturns	with Fina	I Repo	rt			1.1	

an interest





Melbourne Office Unit 3-5, 18 Redland Drive Mitcham VIC 3132 Tel: +613 9874 1988 Fax: +613 9874 1933 email: AU.SampleReceipt.Mitcham@sgs.com

A.B.N. 44 000 964 278

Sample Receipt Acknowledgement

To:	Sarah Viellet	From:	Evan Jones
Fax:	08 9213 7611	Pages:	(1) including this page
Co:	Golder Associates	Date:	5/07/2012
Email	svieillet@golder.com.au	Ref:	M121355

SGS Leeder Consulting has received your samples from the project listed below. If you have any enquiries please contact us quoting our reference number.

Project/Reference No.:	117643092
Our Reference Number:	M121355
Date Received:	05-Jul-2012
Estimated date of report:	12-Jul-2012

Additional Information:

Samples received after 4 pm are considered as received on the next working day for turnaround purposes.

Samples with a 24hr or 48hr TAT are considered as received on the next working day if received after 2:30pm.

Surcharges for urgent turnaround requests may apply. All analytical work is conducted at our Melbourne office.

Sample Storage

- All aqueous samples are stored for two weeks after reporting.
- All soils and other samples are stored for three months after reporting.
- All food samples are stored for one month after reporting.

Please direct any technical or turnaround queries to Adam Atkinson at our Melbourne office.



SGS LEEDER CONSULTING

Specialist Laboratory Services

Melbourne Tel: +613 9874 1988 Fax: +613 9874 1933 Sydney Tel: +612 9959 2351 Fax: +612 8212 5889 Adelaide Tel: +618 8377 4444 Fax: +618 8377 4399 Brisbane Tel: +617 3899 2311 Fax: +617 3899 2322

Website: www.leederconsulting.com Email: AU.SampleReceipt.Mitcham@sgs.com

Form - 009

Date of Issue 26/06/12





A.B.N. 44 000 964 278 3 - 5, 18 Redland Drive Mitcham, Vic, 3132 Telephone: (03) 9874 1988 Fax: (03) 9874 1933

Chartered Chemists

11-Jul-2012

Golder Associates Level 2 1 Havelock Street West Perth WA 6005 Attention: Sarah Viellet

REPORT NUMBER: M121355

Site/Client Ref: 117643092

CERTIFICATE OF ANALYSIS

SAMPLES:

Two samples were received for analysis

DATE RECEIVED:

DATE COMMENCED:

METHODS:

See Attached Results

5-Jul-2012

5-Jul-2012

RESULTS:

Please refer to attached pages for results.

Note: Results are based on samples as received at Leeder Consulting's laboratories

REPORTED BY:

onen

Evan Jones Manager



NATA Accredited Laboratory Number: 2562

Accredited for compliance with ISO/IEC 17025.





Report N°: M121355

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

	Leeder ID	2012015872	2012015874	2012015875
	Client ID	Q9514-01	Q9514-01	Method
Analyte Name	PQL		Duplicate	Blank
C6-C9	0.01	nd	nd	nd
C10-C14	0.01	nd	nd	nd
C15-C28	0.05	nd	nd	nd
C29-C36	0.05	nd	nd	nd
Total C6-C36	0.05	nd	nd	nd





Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012015872	2012015874	2012015875
	Client ID	Q9514-01	Q9514-01	Method
Analyte Name	PQL		Duplicate	Blank
Bromobenzene	0.1	nd	nd	nd
Bromochloromethane	0.1	nd	nd	nd
Bromodichloromethane	0.1	nd	nd	nd
Bromoethane	0.1	nd	nd	nd
Bromoethyne	0.1	1.2	1.4	nd
Dibromochloromethane	0.1	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.1	nd	nd	nd
Dibromoethane	0.1	nd	nd	nd
cis-1,2-Dibromoethene	0.1	1.6	1.5	nd
trans-1,2-Dibromoethene	0.1	nd	nd	nd
1,2-Dibromoethene(c,t)	0.1	1.6	1.5	nd
Dibromomethane	0.1	nd	nd	nd
1,1,2,2-Tetrabromoethane	0.1	nd	nd	nd
Tetrabromoethane	0.1	nd	nd	nd
Tetrabromoethene	0.1	nd	nd	nd
Tribromoethane	0.1	nd	nd	nd
Tribromoethene	0.1	nd	nd	nd
Tribromomethane	0.1	nd	nd	nd
Vinyl bromide	0.1	1.7	1.8	nd





Report N°: M121355

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012015872	2012015873	2012015874	2012015875
	Client ID	Q9514-01	Q9514-02	Q9514-01	Method
Analyte Name	PQL			Duplicate	Blank
Benzene	0.001	nd	nd	nd	nd
Bromobenzene	0.001	nd	nd	nd	nd
Bromochloromethane	0.001	nd	nd	nd	nd
Bromodichloromethane	0.001	nd	nd	nd	nd
Bromomethane	0.001	nd	nd	nd	nd
n-Butylbenzene	0.001	nd	nd	nd	nd
s-Butylbenzene	0.001	nd	nd	nd	nd
t-Butylbenzene	0.001	nd	nd	nd	nd
Carbon tetrachloride	0.001	nd	nd	nd	nd
Chlorobenzene	0.001	nd	nd	nd	nd
Chloroethane	0.001	nd	nd	nd	nd
Chloromethane	0.001	nd	nd	nd	nd
2-Chlorotoluene	0.001	nd	nd	nd	nd
4-Chlorotoluene	0.001	nd	nd	nd	nd
Dibromochloromethane	0.001	nd	nd	nd	nd
1,2-Dibromo-3-chloropropane	0.001	nd	nd	nd	nd
1,2-Dibromoethane	0.001	nd	nd	nd	nd
Dibromomethane	0.001	nd	nd	nd	nd
1,2-Dichlorobenzene	0.001	nd	nd	nd	nd
1,3-Dichlorobenzene	0.001	nd	nd	nd	nd
1,4-Dichlorobenzene	0.001	nd	nd	nd	nd
Dichlorodifluoromethane	0.001	nd	nd	nd	nd
1,2-Dichloroethane	0.001	nd	nd	nd	nd
1,1-Dichloroethane	0.001	0.015	nd	0.015	nd





Report N°: M121355

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012015872	2012015873	2012015874	2012015875
	Client ID	Q9514-01	Q9514-02	Q9514-01	Method
Analyte Name	PQL			Duplicate	Blank
1,1-Dichloroethene	0.001	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.001	0.054	nd	0.051	nd
trans-1,2-Dichloroethene	0.001	nd	nd	nd	nd
Dichloromethane	0.01	nd	nd	nd	nd
1,2-Dichloropropane	0.001	nd	nd	nd	nd
1,3-Dichloropropane	0.001	nd	nd	nd	nd
2,2-Dichloropropane	0.001	nd	nd	nd	nd
1,1-Dichloropropene	0.001	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.001	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.001	nd	nd	nd	nd
Ethylbenzene	0.001	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.001	nd	nd	nd	nd
Isopropylbenzene	0.001	nd	nd	nd	nd
p-Isopropyltoluene	0.001	nd	nd	nd	nd
Naphthalene	0.001	nd	nd	nd	nd
Propylbenzene	0.001	nd	nd	nd	nd
Styrene	0.001	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.001	nd	nd	nd	nd
Tetrachloroethene	0.001	0.032	nd	0.030	nd
1,1,1,2-Tetrachloroethane	0.001	nd	nd	nd	nd
Toluene	0.001	nd	nd	nd	nd
Tribromomethane	0.001	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.001	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.001	nd	nd	nd	nd
1,1,1-Trichloroethane	0.001	nd	nd	nd	nd





Report N°: M121355

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Sample units are expressed in mg/L

	Leeder ID	2012015872	2012015873	2012015874	2012015875
	Client ID		Q9514-02	Q9514-01	Method
Analyte Name	PQL			Duplicate	Blank
1,1,2-Trichloroethane	0.001	nd	nd	nd	nd
Trichloroethene	0.001	0.049	nd	0.045	nd
Trichlorofluoromethane	0.001	0.005	nd	0.005	nd
Trichloromethane	0.001	0.011	nd	0.010	nd
1,2,3-Trichloropropane	0.001	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.001	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.001	nd	nd	nd	nd
Vinyl Chloride	0.001	nd	nd	nd	nd
m&p-Xylenes	0.001	nd	nd	nd	nd
o-Xylene	0.001	nd	nd	nd	nd

Matrix: Water

Method: MA-30.WW.02 Total Petroleum Hydrocarbons

	Leeder ID	2012015873	2012015875
	Client ID	Q9514-02	Method
Analyte Name	PQL		Blank
C6-C9 (Purge & Trap)	0.01	nd	nd





Report N°: M121355

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID	2012015872	2012015873	2012015874	2012015875
	Client ID	Q9514-01	Q9514-02	Q9514-01	Method
Analyte Name	PQL			Duplicate	Blank
Dibromofluoromethane		102	76	104	81
12-Dichloroethane-d4		102	97	104	90
Toluene-d8		101	101	101	101
p-Bromofluorobenzene		93	94	95	95





Report N°: M121355

Matrix: Water

Method: MA-30.WW.01 Total Petroleum Hydrocarbons

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012015878	2012015879
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Total C6-C36		129	129

Matrix: Water

Method: MA-15.WW.09 Brominated Volatile Organic Compounds

	Leeder ID	2012015878	2012015879
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Bromodichloromethane		111	103
Dibromochloromethane		100	95
cis-1,2-Dibromoethene		108	102
trans-1,2-Dibromoethene		106	99
1,2-Dibromoethene(c,t)		107	100
Tribromoethane		100	92
Tribromoethene		107	98
Tribromomethane		105	97





Report N°: M121355

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012015878	2012015879
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
Benzene		122	115
Bromodichloromethane		100	94
Carbon tetrachloride		109	101
Chlorobenzene		127	119
Dibromochloromethane		94	89
1,2-Dichlorobenzene		128	120
1,3-Dichlorobenzene		118	109
1,4-Dichlorobenzene		118	110
1,2-Dichloroethane		117	112
1,1-Dichloroethane		122	115

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

	Leeder ID	2012015878	2012015879
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
trans-1,2-Dichloroethene		114	108
Dichloromethane		115	108
1,2-Dichloropropane		124	116
Ethylbenzene		115	106
1,1,2,2-Tetrachloroethane		116	107
Tetrachloroethene		109	103
Toluene		117	110
Tribromomethane		94	88
1,1,1-Trichloroethane		110	103





Report N°: M121355

Matrix: Water

Method: MA-15.WW.01 Volatile Organic Compounds

Quality Control Results are expressed in Percent Recovery of expected result

	Leeder ID	2012015878	2012015879
	Client ID	Method	Method
Analyte Name	PQL	Spike	Spike Dup
1,1,2-Trichloroethane		117	112
Trichloroethene		117	111
Trichloromethane		121	114

Matrix: Water

Method: VOC Surrogate Recovery

	Leeder ID Client ID	2012015878 Method	2012015879 Method
Analyte Name	PQL	Spike	Spike Dup
Dibromofluoromethane		100	99
12-Dichloroethane-d4		96	96
Toluene-d8		98	98
p-Bromofluorobenzene		95	93

Report N°: M121355



QUALIFIERS / NOTES FOR REPORTED RESULTS

- PQL Practical Quantitation Limit
- *is* Insufficient Sample to perform this analysis.
- T Tentative identification based on computer library search of mass spectra.
- ND Not Detected The analyte was not detected above the reported PQL.
- NC Not calculated, Results below PQL
- *nr* Not Requested for analysis.
- R Rejected Result results for this analysis failed QC checks.
- SQ Semi-Quantitative result quantitation based on a generic response factor for this class of analyte.
- IM Inappropriate method of analysis for this compound
- U Unable to provide Quality Control data high levels of compounds in sample interfered with analysis of QC results.
- UF Unable to provide Quality Control data- Surrogates failed QCchecks due to sample matrix effects
- L Analyte detected at a level above the linear response of calibration curve.
- C1 These compounds co-elute.
- C2 These compounds co-elute.
- CT Elevated concentration. Results reported from carbon tube analysis
- ** Sample shows non-petroleum hydrocarbon profile



APPENDIX ONE.

CHAIN OF CUSTODY DOCUMENT

	С	HAIN OF CUSTO	DY RECOR	D/ANAL	YSI	s Re	EQU	EST		Ç	29	951	4	pageof
Golder		Project Number: 11764	3092				Laborat	ory Nam	e:	eed	er			
1 Havelock Street							Address	s: Un	it 4	1/5	1	18)	Red	land Dr
West Perth, WA 6005 Australia Telehone +61 8 9213 7600 Fax +61 8 921	3 7611	Golder Contact: Keely Mundle	Golder Em	ail Address: @gold	ler.com	.au	Telepho 03	ne/Fax:	41	988		Contact	: Yha	Kall
Address where reports should be sent to		Sprah Vicillet	Svicil	es L					Analy	ses Req	uired			
PO Box 1914 West Perth, WA 6872 Telephone (61 8) 9213 7600	Other	SH 3 66				0	SUD Q	-e 271	205	51-	214	IR		
Fax (61 8) 9213 7611	Phone	Fax											1	
Sample Control Number (SCN	S	Sample Date Matrix Sampled (over) (D / M / Y)		Number of C		Jule /	N.V.S.						RUSH	Remarks (over)
QASI4 - 01	1	H20 9/7/12			5 \	/			constitute das de constit					
- 02		b d		<mark></mark>	2	V							¥	
- 03					_								_	
- 04	-			-										
- 06														
- 07					-									
- 08		and the second sec										1		
- 09														
- 10														
- 11	-													
- 12														
Sampler's Signature:	Relinquish	hed by: Signature	Company	Date		T	ime		Received	d by: Sig		2	Com	der consulting
Sample Storage (°C)	Relinquish	ned by: Signature	Company	Date		Т	ime		Received	d by: Sig	gnature	Э	Com	pany
Comments:	Method of	Shipment:	Waybill No:			Receive	a Bel	nck		Date 5		2		Time 10am
	Shipped b	Y ARE	Shipment Condition Seal intact:			Temp (°	C) Co	oler ope	ned by:	Date	e			Time

WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report



ANALYTICAL REPORT



- CLIENT DETAILS		LABORATORY DETAI	LS
Contact	Keely Mundle	Manager	Ros Ma
Client	Golder Associates Pty Ltd	Laboratory	SGS Newburn Environmental
Address	PO Box 1914 (1 Havelock Street, West Perth WA 6005) WEST PERTH WA 6872	Address	10 Reid Rd Newburn WA 6105
Telephone	08 9213 7600	Telephone	(08) 9373 3500
Facsimile	08 9213 7611	Facsimile	(08) 9373 3556
Email	kmundle@golder.com.au	Email	au.environmental.perth@sgs.com
Project	117643092	SGS Reference	PE068436 R0
Order Number	(Not specified)	Report Number	0000042519
Samples	2	Date Reported	05 Jul 2012
		Date Received	21 Jun 2012

COMMENTS _

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(898/20210).

Dissolved Fe spike recovery for sample "Q9504-01" was outside acceptance criteria due to high background. No total metals bottle was provided for Total Fe analysis and thus Ferric Iron could not be determined.

SIGNATORIES

Hue Thanh Ly Spectroscopy Chemist

Rospla

Ros Ma Laboratory Assistant Manager

Newburn WA 6105 Welshpool WA 6983

Australia Australia

t +61 8 9373 3500

f +61 8 9373 3556

www.au.sgs.com



ANALYTICAL REPORT

	Samı Sar S Sa	ble Number nple Matrix ample Date mple Name	PE068436.001 Water 21 Jun 2012 Q9504-01	PE068436.002 Water 21 Jun 2012 Q9504-02
Parameter	Units	LOR		
Ferrous Iron in water Method: AN271				
Ferrous Iron, Fe2+	mg/L	0.05	2.5	0.97
Ferric Iron, Fe3+	mg/L	0.05	-	-
Metals in Water (Dissolved) by ICPOES Method: AN	320/AN321			
Iron, Fe	mg/L	0.02	2.4	0.77



QC SUMMARY

MB blank results are compared to the Limit of Reporting LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample. DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

Ferrous Iron in water Method: ME-(AU)-[ENV]AN271

Parameter	QC	Units	LOR	MB	DUP %RPD	LCS
	Reference					%Recovery
Ferrous Iron, Fe2+	LB043563	mg/L	0.05	<0.05	1%	103%

Metals in Water (Dissolved) by ICPOES Method: ME-(AU)-[ENV]AN320/AN321

Parameter	QC	Units LOR		MB	DUP %RPD	LCS	MS
	Reference					%Recovery	%Recovery
Iron, Fe	LB043969	mg/L	0.02	<0.02	0%	103%	82%



METHOD SUMMARY

METHOD	
	WETHODOLOGT SUMWART
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN271	Ferrous Iron by Aquakem DA: Iron in the ferrous state is treated with 1,10-phenathroline at pH 3.2. The intensity of the resultant orange/red coloured solution is proportional to the amount of ferrous iron present. Reference APHA 3500-Fe D.
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.

FOOTNOTES Insufficient sample for analysis. IS QFH QC result is above the upper tolerance LNR Sample listed, but not received. QFL QC result is below the lower tolerance This analysis is not covered by the scope of

- The sample was not analysed for this analyte
- NVL Not Validated

- accreditation. ۸ Performed by outside laboratory.
- Limit of Reporting LOR
- Raised or Lowered Limit of Reporting 1↓

Samples analysed as received. Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.au.sgs.com/terms_and_conditions_au. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

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STATEMENT OF QA/QC PERFORMANCE

CLIENT DETAILS		LABORATORY DETAIL	LS	
Contact	Keely Mundle	Manager	Ros Ma	
Client	Golder Associates Pty Ltd	Laboratory	SGS Newburn Environmental	
Address	PO Box 1914 (1 Havelock Street, West Perth WA 6005) WEST PERTH WA 6872	Address	10 Reid Rd Newburn WA 6105	
Telephone	08 9213 7600	Telephone	(08) 9373 3500	
Facsimile	08 9213 7611	Facsimile	(08) 9373 3556	
Email	kmundle@golder.com.au	Email	au.environmental.perth@sgs.com	
Project	117643092	SGS Reference	PE068436 R0	
Order Number	(Not specified)	Report Number	0000042520	
Samples	2	Date Reported	05 Jul 2012	

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client. This QA/QC Statement must be read in conjunction with the referenced Analytical Report. The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met.

Sample counts by matrix	
Date documentation received	
Samples received without headspace	
Sample container provider	
Samples received in correct containers	
Sample cooling method	
Complete documentation received	

2 Water 21/6/2012 Yes SGS Yes Ice Bricks Yes

Type of documentation received Samples received in good order Sample temperature upon receipt Turnaround time requested Sufficient sample for analysis Samples clearly labelled Number of eskies/boxes received

Australia

Australia

COC Yes 8°C Standard Yes Yes 1

f +61 8 9373 3556

t +61 8 9373 3500

www.au.sqs.com

SGS Australia Pty Ltd ABN 44 000 964 278 Environmental Services 10 Reid Rd PO Box 32 Newburn WA 6105 Welshpool WA 6983



HOLDING TIME SUMMARY

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in Green when within suggested criteria or Red with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Ferrous Iron in water							Method: N	ME-(AU)-[ENV]AN271
Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Q9504-01	PE068436.001	LB043563	21 Jun 2012	21 Jun 2012	28 Jun 2012	22 Jun 2012	28 Jun 2012	22 Jun 2012
Q9504-02	PE068436.002	LB043563	21 Jun 2012	21 Jun 2012	28 Jun 2012	22 Jun 2012	28 Jun 2012	22 Jun 2012
Metals in Water (Dissolved) b	y ICPOES						Method: ME-(AU)	-[ENV]AN320/AN321
Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Q9504-01	PE068436.001	LB043969	21 Jun 2012	21 Jun 2012	18 Dec 2012	29 Jun 2012	18 Dec 2012	02 Jul 2012
Q9504-02	PE068436.002	LB043969	21 Jun 2012	21 Jun 2012	18 Dec 2012	29 Jun 2012	18 Dec 2012	02 Jul 2012


SURROGATES

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in Green when within suggested criteria or Red with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.



METHOD BLANKS

PE068436 R0

Method: ME-(AU)-[ENV]AN320/AN321

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in Green when within suggested criteria or Red with an appended dagger symbol (†) when outside suggested criteria.

Ferrous Iron in water				Method: ME-(AU)-[ENV]AN271
Sample Number	Parameter	Units	LOR	Result
LB043563.001	Ferrous Iron, Fe2+	mg/L	0.05	<0.05

Metals in Water (Dissolved) by ICPOES

Sample Number	Parameter	Units	LOR	Result
LB043969.001	Iron, Fe	mg/L	0.02	<0.02



Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in Green when within suggested criteria or Red with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Ferrous Iron in water						Meth	od: ME-(AU)-[ENVJAN271
Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
PE068436.002	LB043563.005	Ferrous Iron, Fe2+	mg/L	0.05	0.97	0.96	20	1

Metals in Water (Dissolved) by ICPOES

Metals in Water (Dis	ssolved) by ICPOES					Method: ME	-(AU)-[ENV]AI	N320/AN321	1
Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
PE068585.005	LB043969.014	Iron, Fe	mg/L	0.02	0.00125953	0.00188572	200	0	
PE068585.014	LB043969.024	Iron, Fe	mg/L	0.02	0.00214755	0.00361454	200	0	



Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in Green when within suggested criteria or Red with an appended dagger symbol (†) when outside suggested criteria.

Ferrous Iron in water					1	Method: ME-(A	U)-[ENV]AN271
Sample Number	Parameter	Units	S LOR	Result	Expected	Criteria %	Recovery %
LB043563.002	Ferrous Iron, Fe2+	mg/L	0.05	0.10	0.1	80 - 120	103

Metals in Water (Dissolved) by ICPOES

Metals in Water (Dissolved) by ICPOE	S				Method:	ME-(AU)-[EN\	/JAN320/AN321
Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB043969.002	Iron, Fe	mg/L	0.02	2.1	2	80 - 120	103



MATRIX SPIKES

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in Green when within suggested criteria or Red with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Metals in Water ([Dissolved) by ICPOES					Method: ME	E-(AU)-[ENV	JAN320/AN321
QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
PE068436.001	LB043969.004	Iron, Fe	mg/L	0.02	4.1	2.4	2	82



Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in Green when within suggested criteria or Red with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.



PE068436 R0

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf

- * Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.
- IS Insufficient sample for analysis.
- LNR Sample listed, but not received.
- LOR Limit of reporting.
- QFH QC result is above the upper tolerance.
- QFL QC result is below the lower tolerance.
- ① At least 2 of 3 surrogates are within acceptance criteria.
- ② RPD failed acceptance criteria due to sample heterogeneity.
- ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
- ④ Recovery failed acceptance criteria due to matrix interference.
- Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- 6 LOR was raised due to sample matrix interference.
- ⁽⁷⁾ LOR was raised due to dilution of significantly high concentration of analyte in sample.
- Image: Image:
- I Low surrogate recovery due to the sample emulsifying during extraction.
- † Refer to Analytical Report comments for further information.

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service, available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This test report shall not be reproduced, except in full.



SAMPLE RECEIPT ADVICE

CLIENT DETAILS		LABORATORY DETAILS _	
Contact	Keely Mundle	Manager	Ros Ma
Client	Golder Associates Pty Ltd	Laboratory	SGS Newburn Environmental
Address	PO Box 1914 (1 Havelock Street, West Perth WA 6005) WEST PERTH WA 6872	Address	10 Reid Rd Newburn WA 6105
Telephone	08 9213 7600	Telephone	(08) 9373 3500
Facsimile	08 9213 7611	Facsimile	(08) 9373 3556
Email	kmundle@golder.com.au	Email	au.environmental.perth@sgs.com
Project	117643092	Samples Received	Thu 21/6/2012
Order Number	(Not specified)	Report Due	Thu 28/6/2012
Samples	2	SGS Reference	PE068436

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Thursday 21/6/2012. Results are expected to be ready by Thursday 28/6/2012. Please quote SGS reference PE068436 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Water	Type of documentation received	COC
Date documentation received	21/6/2012	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	1

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS _

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.

SGS Australia Pty Ltd ABN 44 000 964 278 Environmental Services 10 Reid Rd PO Box 32

d Newburn WA 6105 2 Welshpool WA 6983 Australia Australia

t +61 8 9373 3500 f +61 8 9373 3556

www.au.sgs.com



SAMPLE RECEIPT ADVICE

PE068436

_	CLIENT DET	AILS				
C	lient		Golder Associates Pty Lt	td Project	117	7643092
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			errous Iron in water			
	No.	Sample ID	Ľ.			
	001	Q9504-01	2			
	002	Q9504-02	2			

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document. The numbers shown in the table indicate the number of results requested in each package.

Please indicate as soon as possible should your request differ from these details.

Testing as per this table shall commence immediately unless the client intervenes with a correction.







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- 05																	1		
- 06										-									
- 07																			
- 08																			
- 09																			
- 10																			
- 11																			
- 12																			
ampler's Signator	t		Relinqui	shed by: S	ignature		Compar	der	Date / L	12		Time			Received	by: Sign	ature	Con	ipany
mple Storage (°C)	110		Relinqui	shed by: S	ignature		Compar	у	Date			Time)		Received	by: Signa	ature	Con	npany
nents:	availe	6	Method	of Shipmer	nt:		Waybill	No:		_	Rec	eived fo	or Lab	by:		Date			Time
0434	511 24	1.010	Shipped	by:			Shipmer	nt Conditio	on:		Tem	ıp (°C)	Coc	oler op	ened by:	Date			Time

Recipiend

WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report

4

				CHAI	N OF	сиѕто	DY R	ECOI	RD/ANA	LY	SIS	RE	QU	ES	r	(2 9!	501	page_lof_l
Go	lder			Proje	ect Number:	11764	309	2				L	abora	lory Na	ime: Leedo	20	emp	Otr:	
Havelock Street)		Sho	rt Title: Be	llevice	Annia	12	212			A	Addres	s: Un	it 4/5	18	Red	land	nd-
est Perth, WA 60 elehone +61 8 921	3 7600 Fax	+61 8 92	13 7611	Gold	ler Contach	Nondle		Golder E	Email Address:	golder.	com.au	1	Telepho B	one/Fa	11988		Co	ntact:	all
Address where rep PO Box 19 ⁻ West Perth	orts should be 14 WA 6872	sent to	Other	S	arah V	letter		Svie	aller						Analys	es Rei	guired		
Telephone (Fax (61 8) 9	61 8) 9213 7 213 7611	600	-043	34 SH 3	عامالح					ars									
			Phone		_	Fax				ontaine		M	P)-						
Sample Control Number (SCN	Sample Location	Sa#	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH / MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Co	Suik 2	Suite	TA16-	vocs				HSH	Remarks (over)
9501 - 01	MWZL			Hzù	20612					7	V							-	Quote
- 02	MWEZ:			1				FD	10-10190	7	\checkmark								0021265174
- 03	MW25									7	\bigvee								
- 04	Ainsta	Black						Finsat	4	7	\checkmark	1.01						5	- Tota - Metal
- 05	MW21.									6	1							_	
- 06	5405		-						-	6		~		_	_			<	- Tetalmet
- 07	Trippin	-		V	V					1			\checkmark	~	_				
- 08					-	-									_			-	
- 10					-	-							-	-	-			-	
- 10					-					-				-		-		-	
- 12																			
ianoter's Signatur	(Relinge	in benai	Signature		Compar	ıy AL	Date 20/6/1	2		Tim	e		Received	by: Sig	gnature	Cor	npany
Sample Storage (°C))		Relinqu	ished by: S	Signature		Compar	у	Date		31	Tim	e		Received	by: Sig	gnature	Cor	npany
comments: Quet	0		Method	of Shipme	ent:		Waybill	No:	1		Rec	eived	for Lab	by:		Dat	e	_	Time
002 005F	+WB1		Shipped	d by:			Shipme Seal int	nt Conditic act:	on:		Ten	ıp (°C)	Co	oler op	ened by:	Dat	e		Time

				CHAI	N OF C	USTO	DY R	ECOI	RD/ANA		SIS	REC	QUES	Т		QS	950	02	page_lof_l
Go	lder			Proje	ect Number:	11-	1643	309	2			La	boratory N	ame:	early	1. (1	mo	ult	ting
Havelock Street	05 Australia			Shor	t Title:	Belle	lue	Ann	ral 2	Dra	2.	Ad	Idress:	+4-9	5/18	Red	lan	dſ	x.)
elehone +61 8 921	3 7600 Fax	+61 8 92	213 7611	Gold	er Contact:	dle		Golder E	mail Address:	golder.	com.au	Te	lephone/Fi	3X: 74	158	8	Contac	ynd	lall
Address where rep	orts should be	sent to		9	with Vie	let		SVIC	illet					A	nalyses	Required			
PO Box 19 West Perth, Telephone (Fax (61 8) 9	14 WA 6872 61 8) 9213 70 9213 7611	600	Other	043	4 511	366	*			ners		, VCKs		re	G	ANS	1		
			Phone	-		Fax				contai	3	ÿ	Q	P-2	20				
Sample Control Number (SCN	Sample Location	Sa#	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH / MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of C	Suite.	TPH Co.		b				RUSH	Remarks (over)
29902-01	5606				21/6/12	0900				6	~							e	Totalmetal
- 02	5606					0900		FD	Q9502-	6	1							*	- Totalmete
- 03	5607					1015			_	6	1							4	- total metals
- 04	MW2036					001			1	6	1						1		
- 05	MNG60					12:10				6	1							1-7	Dissolved
- 06	MUGOO								1	6	\checkmark						1		metals.
- 07	MWG68									6	V						1		
- 08	Trip Blan	12						TB		1		1							
- 09		1	1.					1000	1							1			
- 10	1																		
- 11																			
- 12																			
ampler's Signature	A		Relinqu	ahed by	signature		Compar	Zen	Date 216	12		Time		Rec	eived by:	: Signatur	e	Con	ıpany
Sample Storage (°C)		Relinqu	ished by: S	Signature		Compar	ny	Date			Time		Rec	eived by	Signatur	e	Con	ıpany
comments:	e		Method	of Shipme	nt:		Waybill	No:	1		Rec	eived fo	or Lab by:	1		Date		1	Time
Quote	05176	JB)	Shipped	i by:			Shipme Seal int	nt Conditic act:	on:		Tem	ıp (°C)	Cooler o	pened t	oy:	Date			Time

				CHAI	N OF C	USTO	DY R	ECO	RD/ANA	LY	SIS	RE	QU	ES	Т		(2 9!	503	pageof
Go	lder			Proje	ect Number:	1176	430	92		-		L	aborat	ory Na	ame:	A	2			
Havelock Street	ociates			Shor	t Title: Be	leve	e An	nual	2012	,		P	ddress	s: t	0 1	100	L W	say	Ma	laga
est Perth, WA 60 elehone +61 8 921	05 Australia 3 7600 Fax	+61 8 92	213 7611	Gold	er Contact:	undle		Golder E	Email Address:	golder.	com.au	r L	elepho	209	1X: 76	55		Co	ntact:	en.
Address where rep	orts should be	sent to		Se	arah	Vieille	+	SV	ieillet a	ridan	der	con	1.0	N		Analyse	es Req	uired		
PO Box 191 West Perth, Telephone (4 WA 6872 61 8) 9213 76	500	Other	*0	434 5	11 3d	the	_		ß	nina ked-	MENE	DG	N	als	, Ni	1			
T ax (01 0) 8	2137011		Phone			Fax	I	_		ontaine	Chlo	enze	d Va	95 1	met	S Co				
Sample Control Number (SCN	Sample Location	Sa#	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D/M/Y)	Time Sampled (HH/MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Co	VOG MAH	9 x)	Brominuk	Nitrak	10 494	Ha, AL, A	1Zn		HSUS	Remarks (over)
39503-01	5606			420	21/6/17	0900		FT	QUSC2;	6	1		~	~	1				E	-Total metal
• - 02	MWG60				1	12:10		FT		2			~							
N - 03	Tripblk			1	V	1.1				1	~		~							
- 04		1				_		14				-								
- 05						5														
- 06						· · · · · ·														
- 07																				
- 08																				
- 09	1		1																	
- 10																				
- 11																				J
- 12																				
Sampler's Signature			Relinou	ished by: S	ignature		Compar	ny Jea	Date 21/4	10	2	Tim	e		Red	ceived	by: Sig	nature	Cor	mpany
Sample Storage (°C			Relinqu	ished by: S	Signature		Compar	ıy	Date	1		Tim	e		Red	ceived	by: Sig	nature	Cor	mpany
Comments.	e		Method	of Shipme	nt:		Waybill	No:			Red	ceived 1	for Lab	by:	-		Date	9	_	Time
			Shipped	l by:			Shipmer Seal inta	nt Conditio act:	on:		Ten	np (°C)	Co	oler op	pened	by:	Date	9		Time

Accound .

				CHAI	N OF C	CUSTO	DY R	ECOF	RD/ANA	LYS	SIS	REC	QUES	т	(2 95	04	page_lof_l
Go	lder			Proje	ect Number:	1176	430	292	_			La	boratory N	^{ame:} 5	568	5		
1 Havelock Street				Shor	t Title: Be	ellevue	e A	nnu	al			Ad	dress: /C	Reid	1 R	ld,r	Ver	Nburn
Telehone +61 8 921	13 7600 Fax	+61 8 9	213 7611	Gold	eely N	Jundi	e	Golder E	mail Address:	golder.	com.au	Те	lephone/Fa	ax: 3 3500	0	Conta	act:	ones
Address where rep	orts should be	sent to		5	avah	Viei	llet	suie	illetog	Ide	x.co	· ma	au.	Analys	ses Rec	quired		
PO Box 19 West Perth Telephone	14 , WA 6872 (61 8) 9213 76	□ 600	Other	04	+ 34	511	366					_						
Fax (61 8) 9	9213 7611		Phone		_	Fax				ontainers	1 ay	Ira						
Sample Control Number (SCN	Sample Location	Sa#	Sample Depth (m)	Sample Matrix (over)	Date Sampled (D / M / Y)	Time Sampled (HH / MM)	Sample Type (over)	QAQC Code (over)	Related SCN (over)	Number of Co	Ferrous	Ferric					HSUSH	Remarks (over)
Q 9504 - 01	MWG60			W	21612	12-10				2	V	7						Doughed
- 02	MW666			1	4	13.10				2	\checkmark	\checkmark						(Field)
- 03	1																	Filtered
- 04																		
- 05																		
- 06																		
- 07									· · · · · · · · · · · · · · · · · · ·									
- 08																		
- 09	6-11 B											TT						
- 10	1				· · · · · ·			1									\square	
- 11																		
- 12																		
Sampler's Signature	ill		Relinqu	ished by: S	ignature		Compar	der	Date 21/6	112		Time		Received	by: Sig	gnature	Corr	npany
Sample Storage (°C	ESKY		Relinqu	ished by: S	Signature		Compar	ıy	Date			Time		Received	by: Sig	gnature	Corr	прапу
Comments:	1		Method	of Shipme	nt: CR		Waybill	No:			Rec	eived fo	r Lab by:	1	Date	e	-	Time
			Shippe	d by:			Shipme Seal inta	nt Conditio act:	n:		Tem	ıp (°C)	Cooler o	pened by:	Date	e		Time

	WELL NO.:	MW21; Bellevue Ani	nual			JOB N	0.: sγ:√	Devel Purge	/Sample
	WEATHER:	rung, at				DAT	E: 20/	6/12	
1E	MPERATURE:	IN .				TIM	E: 1.24	15.	
MONITC	ORING WELL INF	ORMATION		-111		One well vol	ume:		
Depth to V	Water Below Top o	f Casing:		A 10.983	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0	inch) diameter we
Depth to I	Bottom of Well Belo	w Top of Casin	g:	В	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1.5	inch) diameter we
Jameter	Standpipe:			C((mm)				
EQUIPME									
рн	and Temp. Meter:	Model TP:	<u>5 90 FLMV</u>	Serial No.	06457	Calibration B	uffers: 🔀 4	7	10
Disast	onductivity Meter:	Model		Serial No.	-1	Calibration S	olutions: <u>2.76n</u>	<u>nS/cm</u> and	
DISSOIV	ed Oxygen Meter:	Model		Serial No.		_			
	⊏n Meter:			Serial No.		Туре			
	Pump: [Reiler: N] none			Waterra		Perista	altic	Submersibl
1.	Baller:			-	Stainless	Steel	Teflon		PVC
		GING	ais)		No				
urge volu		-		litroo		O have	ipla		
F	ow Rate:	and I	/min v/	nures	Method:	SCOMEN			
	VOLUME	DISSO	COND		_ Start:		Fi	nish:	
TIME	REMOVED (L)	(mg/L) or %	(uS/cm)	(UNITS)	Eh (m\/)	TEMP (°C)	(m bloc)	REMARKS	
Stabilisati	on Range	+/- 10%	+/- 5%	+/- 0 1	+/- 10	+/-05	1 100000	00000	11.0
107		3.61	1110/15	6.60	-63	16.5		DUSERE	1.08 -
12		2.20	119645	6.57	-65	17.8		luner	flow to
								utss-sk	e aux to alle
							1	feci	wige - restarts
								13	OS THE
					1			in	ning chuy-will
								went	to rechoice
								auple Q	1V3D
					1			mate	(pc
					4				
-									
nments:	Odour:	no ye Furbidity Start: Furbidity End: Other: <u>CC</u>	s ifyes (Clear Clear OC Number -	<u>hemod</u> 111471111 111471111 09501-	Sheen		yes if	yes /ery Silty /ery Silty	
BOT	TLE	Туре	Size: Ar)ml 100ml 25	0ml 500	41 01 41			
1	Pla	stic Glas	S 0126. 40	ANE TOOLIL 20		IL ZL 4L	Filter	Ted No.	Preservatives
te 2	Plas	stic 🚺 Glas	s	3	- <u>* (</u>				-
3	Plas	stic 🗌 Glas	s	1			Tes Vec		Her
· / 4	Plas	stic 🗌 Glas	s	1			Ves		tunz
5	Plas	itic 🔲 Glas	s				Yes		-1005
A	Plas	tic Glas	5						
0							111303		
7	Plas	tic 🔲 Glass	5				Yes		

3,91

June 200:

Groundwater Development and Purging/Sampling Data Sheet

G	older	Groun	dwater De	velopment	and Pur	ging/Sam	pling Data	a Sheet	
Ass	ociates	5						Deve	lopment
WEL	L NO.:	MNG	23						e/Sample
LOCA		Bellevue Ar	nual		C	OMPLETED B	Y:	KC S	V
WEA	THER:	Overce	ist, Rain	×		DAT	1	9/6/12	
TEMPERA	TURE:	2000				TIM	E:	240	
MONITORING	WELL INFO	ORMATION		2.2		One well volu	me.		
Depth to Water B	elow Top of	Casing:		A 11.42	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2	0 inch) diameter wel
Depth to Bottom of	of Well Belov	v Top of Casi	ng:	В	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1	5 inch) diameter wei
Diameter Standpi	pe:			C <u>50</u> (mm)				
EQUIPMENT LIS	т								
pH and Ter	np. Meter:	Model TF	S 90 FLMV	Serial No.	V6457	Calibration Bu	uffers: 🖂 4	7	□ 10
Conducti	vity Meter:	Model	и	Serial No.	- 11	Calibration Sc	olutions: 2.76m	یتے ماS/cm and	
Dissolved Oxy	gen Meter:	Model		Serial No.	<u>6</u>	2	<u> </u>		
	Eh Meter:	Model		Serial No.	13	Type			
Pump:		none		Γ	Waterra		Perist	altic	Submersible
Bailer:	\triangleright	none		Ē	Stainless S	Steel			
Filter:	\geq	Yes (for me	etals)		No			191	
ELL DEVELOP	MENT\PURG	SING							
urge volume:	Well vol X	=		litres	Method:				
Flow Rate	e: 200	D F& m	L/min V	olume	Start:		Fi	nish:	
	OLUME OVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisation Rar	ige	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5			
6:46		4.03 pp	773as	6.59	-S2mV	21.9		00 13	2.02 btec
CSI Col		2.92	810	6.54	-61	21.8			
101		2.23	841	6.55	-63	21.8		Some since	III bubbles in 1
:06		2.28	9/4	6.51	- 68	21.1		A	
111		2.21	101245	6.54	-75	21.3		danio	schorge fim
16		1.27	1075	6.54	- 86	21.3		Clorent	ound of the mark
121		1.03	1105	6.53	-91	21.4		1900	
:26		0.89	1132	6.54	-93	21.3		Bubblesin	live again
2		1.86	1081	6.54	- 81	21.3		reivered pr	essue t'olischic
								increased	recharge t
1									
mments:				an me	derate	6			
0	dour:	по 🔀 у	es ifyes 4	Report Cherry	Sheen		ves if	Ves	
	т	urbidity Start:	Clear		X			Verv Siltv	
	т	urbidity End:	Clear					Verv Siltv	
	0	ther: <u>C</u>	OC Number	- Q 810	45-06	π			
		Bla	ck pieces	queris	h colou	ir to in	ater.		
BOTTLE	-	Гуре	Size: 4	0mL 100mL 25	0mL 500mL	1L 2L 4L	Filte	red	Preservatives
H2 1	Plas	tic 🔀 Gla	ISS		2			No	10001100005
2	Plas	tic 🛛 🔀 Gla	ISS	3			Tyes		
3	Plas	tic 🗌 Gla	ISS	2			Yes		
4	Plas	tic 🗌 Gla	ISS				Yes		
5	Plas	tic 🔲 Gla	ISS				TYes		
6	Plast	tic Gla	SS				Yes		
Ū.									
7	Plast	ic 🗌 Gla	SS _				Yes		

Golder Associates

Groundwater Development and Purging/Sampling Data Sheet

WELL NO.: LOCATION: WEATHER: TEMPERATURE:	Bellevue Annual		C	JOB NO. COMPLETED BY DATE TIME		Development Purge/Sample <u>17643092 tsk 8000</u> /kc
MONITORING WELL INF Depth to Water Below Top of Depth to Bottom of Well Belo Diameter Standpipe:	ORMATION f Casing: w Top of Casing:	A 2.302 B	(metres) (metres)	One well volur (B-A)*2.0 = (B-A)*1.1 =	ne: litres litres	for a 51 mm (2.0 inch) diameter wel for a 38 mm (1.5 inch) diameter wel
EQUIPMENT LIST pH and Temp. Meter: Conductivity Meter: Dissolved Oxygen Meter: Eh Meter: Pump: Bailer: Filter:	Model <u>TPS 90 FLMV</u> Model <u>"</u> Model <u>"</u> Model <u>"</u> none Yes (for metals)	Serial No. Serial No. Serial No. Serial No.	V 4866	_ Calibration But _ Calibration Sol _ _ Type Steel	ffers: 4 lutions: <u>2.76m</u> Perista	NT 10 NS/cm and altic Submersible PVC
WELL DEVELOPMENT\PUR Purge volume: Well vol X Flow Rate:	GING =	_ litres	Method:	peristal	ltic.	
TIME REMOVED (L)	DISS O ₂ COND. (mg/L) or % (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	nish:
Stabilisation Range	+/-10% +/-5% 311 1165 1.02 1188 0.42 1206 0.40 1206	+/-0.1 6.05 5.98 5.94 5.94 5.94	+/- 10 45 40 57 39	+/- 0.5 17.1 18 7 18 C 18 C		DD.set@32.4~bta 11. ycllw
101	0-24 1208	5.92	34 31	18.7 18.7 18]		suspended ovance sodi
5						
omments: Odour:	no ves if yes Furbidity Start: Clear (Furbidity End: Clear (Other: <u>COC Numbe</u>		Sheen	no []yes if ' '	yes Very Silty Very Silty
BOTTLE 1 Pla 2 Pla	Type Size: stic Glass stic Glass stic Glass	40mL 100mL 29	50mL 500mL	1L 2L 4L 	Filte Yes Yes	red Preservatives

Golder Associates

WELL NO.: // LOCATION: // WEATHER: // TEMPERATURE: //	S IW645 Bellevue An	nual		C	JOB NC COMPLETED B DAT TIM	D.:1 Y:5 E:6	Develo Purge/ 17643092 tsk 80	pment Sample 00
MONITORING WELL INF Depth to Water Below Top of Depth to Bottom of Well Belo Diameter Standpipe:	ORMATION Casing: w Top of Casir	ıg:	A 7.135 B C50	(metres) (metres) (mm)	One well volu (B-A)*2.0 = (B-A)*1.1 =	ime: litres -f litres -f	for a 51 mm (2.0 for a 38 mm (1.5	inch) diameter we inch) diameter wel
EQUIPMENT LIST pH and Temp. Meter: Conductivity Meter: Dissolved Oxygen Meter: Eh Meter: Pump: Bailer: Filter:	Model Model Model Model none None Yes (for me	2S 90 FLMV	Serial No. Serial No. Serial No. Serial No. [[Waterra Stainless No	_ Calibration B _ Calibration S _ _ Type Steel	uffers: 24 olutions: <u>2.76m</u> Perista Teflon	∑7 nS/cm and _ altic	10 Submersible PVC
WELL DEVELOPMENT\PUR Purge volume: Well vol X Flow Rate:	3 20 mL	//min V	litres	Method: Start:	<u>subma</u>	vsible Fi	nish:	
TIME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisation Range 123 123 133 133 143 143 1443 1448 1453	+/-10% S.6 640 3.50 2.61 2.05 1.10 1.46	+1.5% 3152 2.41 mS 2.73.mS 2.84 mS 2.87 mS 2.84 mS 2.84 mS 2.84 mS 2.81 mS 2.91 mS	++-0.1 6.43 6.24 6.20 6.19 6.19 6.19 6.19 6.19	++-10 34 334 35 30 27 24	+/- 0.5 20-7 21-6 22-3 22-3 22-1 21-8 21-8 21-8 21-7		Di) set a It yellow	2 7. 12 Jacks 1. Clearing
Comments: Odour:	no	yes if yes : Clear Clear COC Number	11111 M 1 - Q Si 4	Sheen	X no	yes it	f yes Very Silty Very Silty	
5 Pl 6 Pl 7 Pl	astic G astic G astic G astic G astic G astic G astic G astic G astic G	Size: 4 lass lass ass ass ass ass ass	4umL 100mL :	250mL 500ml	L 1L 2L 4L	Filte Yes Yes Yes Yes Yes Yes Yes	Pred No No No No No No No No No	

WELL NO.: _ LOCATION: _ WEATHER: _	es MWG4 Bellevue A Clady , 1	6 muai			JOB NC COMPLETED B	ping Dat .: Y: _ <u>_5√ C</u> E: _12-6	Devel Devel Purge 117643092 tsk 8	lopment 9/Sample 3000
TEMPERATURE:	~	0			TIM	E: 124	10	
MONITORING WELL IN	FORMATION				One well volu	ime:		
Depth to Water Below Top	of Casing:		A7.13m	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.	0 inch) diameter wel
Depth to Bottom of Well Be	elow Top of Casi	ng:	B	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1,	5 inch) diameter wel
Diameter Standpipe:			C50	(mm)				,
EQUIPMENT LIST								
pH and Temp. Meter	r: Model <u>T</u>	PS 90 FLMV	Serial No	V6457	_ Calibration B	uffers: 🖂 4	7	1 0
Conductivity Meter	r: Model		Serial No	7	Calibration So	olutions: <u>2.76n</u>	nS/cm and	
Dissolved Oxygen Meter	r: Model	*	Serial No	. <u> </u>	_			
Eh Meter	: Model	4	Serial No	x	Type			
Pump: Bailer: Filter:	none	etals)		Waterra Stainless No	Steel	Perist	altic 1	Submersible
	IRGING				- 1			
Furge volume: vvell vol x	-20=		litres	Method:	Subi	ners, bk		
Flow Rate:	100 1	L/min V	/olume	Start:		Fi	nish:	
TIME REMOVED (L) DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisation Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		Doset@7	1.2.3
1252	3.44	1170559	6.54	43	22.0			
1257	100	418	6.00	55	22.0			
1302	1.69	431	6.36	25	25 8			
1307	1-75	429	6.36	11	77.4	-		
1312	1.72	422	6.36	75	72.6			
1317	1.66	422	6.34	19	22.7			
	-							
	-							
1								
	1							
Comments: Odour:	no , Turbidity Start Turbidity End: Other: <u>C</u>	ves if yes : Clear Clear : <mark>OC Number</mark>	- Q8146-	Sheen	□ no] 	☐ yes if 	yes Very Silty Very Silty	
BOTTLE	Туре	Size: 4	10mL 100mL 2	250mL 500ml	. 1L 21. 41	Filte	red	Preservativos
1 🔤 F	Plastic 🗹 Gl	ass	3			Yes	No	10001000005
2 🗍 F	lastic 🔽 Gla	ass		2		Tyes	MNO	
з 🗌 Р	Plastic 🗌 Gla	ass			233		No	
4 🔤 P	lastic 🗌 Gla	ass			222	TYes	N₀	
5 🔤 P	lastic 📃 Gla	ass				Yes	No	
6P	lastic 📃 Gla	iss			422	Yes	No No	
7 <u></u> P	lastic 📃 Gla	iss				Yes	No	
8 [P	lastic Gla	ISS				Yes	No	
			Golder A	ssociates				PE067 R

		00/		-
J	u	ne	20	00

TEM	WELL NO.: M LOCATION: WEATHER:	S Bellevue An CON 20°C	nual		c	JOB NO COMPLETED BY DATE TIME	18/6 18/6	Development Purge/Sample T643092 tsk 8000 C 2012
MONITO	RING WELL INF	ORMATION				One well volu	me:	
Depth to V	/ater Below Top of	Casing:		AILOSS	(metres)	(B-A)*2.0 =	litres -f	or a 51 mm (2.0 inch) diameter w
Depth to B	ottom of Well Belov	w Top of Casin	g:	В	(metres)	(B-A)*1.1 =	litres -f	or a 38 mm (1.5 inch) diameter w
Diameter S	Standpipe:			C <u>50</u> (mm)			
EQUIPME pH a Ca Dissolve	NT LIST and Temp. Meter: onductivity Meter: ad Oxygen Meter: Eh Meter:	Model <u>TP</u> Model Model Model	<u>8 90 FLMV</u> "	Serial No. Serial No. Serial No. Serial No.	V6457 	Calibration Bu Calibration Sc Type	uffers: 2.76m	∑7 ☐10 <u>S/cm</u> and
	Pump:	_ none	tals)		Waterra Stainless No	Steel	Perista	Iltic Submersib
Purde volu	me: Wellvol X	JING		litres	Mathad			
FI	ow Rate:	50 .	l/min \	_intes /olume	Start:	1	Fi	nich:
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m bloc)	REMARKS
Stabilisati	on Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		DD 12.15 m
025		11410 3.46	2008	6.08	23	17.9		
030		293	2014	6.24	26	18		
240		7.66	2027	6-17	30	18.5		
145		2.52	7035	6.19	31	18.6	-	
150		2-11	2035	6-21	33	18.8		
035		2.27	2035	6-20	33	19.0		
100		1.35	2035	6.27	34	19.3	1	
105		1-11	2033	6.30	55	14-5		
Comments:	Odour: [no	res ifyes Clear Clear OC Numbe	<u>Slight orgo</u> 111111111 111111111 1111111111 r- 8149-	, 44,€ Sheen 11111111 1111111 01		, □yes if 	yes Very Silty Very Silty
BO life 1	TTLE 1 Pla 2 Pla 3 Pla 4 Pla	Type astic Glustic Glustic Glustic Glustic Glustic	Size: ass ass ass	40mL 100mL 2	150mL 500ml	- 1L 2L 4L 	Filte	Preservatives No No No No No No
	5 Pla 6 Pla	istic Gli Istic Gli	155 155 255	;			Yes	
			-					
	7 Pla	stic 🔄 Gla	ass				Yes	No

Golder Associates

Golder	Groundwater De §	velopment	and Purg	jing/Samp	ling Data	Sheet	ment
WELL NO .	MWG48					2 Purge/S	ample
	Bellevue Annual		C	OMPLETED BY		KG / C	S
WEATHER:	Sunny, ligh	+ breeze		DATE		18/6/12	
TEMPERATURE:	20.0			TIME	:	11:50	
MONITORING WELL INF	ORMATION			One well volun	ne:		
Depth to Water Below Top of	Casing:	A 12.10	(metres)	(B-A)*2.0 =	litres -f	or a 51 mm (2.0 ir	nch) diameter well
Depth to Bottom of Well Belo	w Top of Casing:	в	(metres)	(B-A)*1.1 =	litres -f	or a 38 mm (1.5 ir	nch) diameter well
Diameter Standpipe:		C <u>50</u> (I	nm)			,	,
EQUIPMENT LIST							
pH and Temp. Meter:	Model TPS 90 FLMV	Serial No.	J6457	Calibration But	ffers: 🖂4	7	□ 10
Conductivity Meter:	Model"	Serial No.	51	Calibration Sol	utions: <u>2.76m</u>	S/cm and	
Dissolved Oxygen Meter:	Model	Serial No.	M				
Eh Meter:	Model"	Serial No.	M	Туре			
Pump:	none		Waterra		Perista	ltic	Submersible
Bailer:	 None	Γ	Stainless S	Steel	Teflon		PVC
Filter:	Yes (for metals)		No				
WELL DEVELOPMENT\PUR	GING						
Purge volume: Well vol X	=	litres	Method:	<u></u>			
Flow Rate:	120 mL/min	/olume	_ Start:	;	Fir	nish:	
TIME VOLUME REMOVED (L)	DISS O ₂ COND. (mg/L) or % (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisation Range	+/- 10% +/- 5%	+/- 0.1	+/- 10	+/- 0.5			
1155	1.99 1069 u	5 6.51	74mV	19.3		00set	W 12.20
(200	111 1065	6.70	92	19.1			
1210	1.74 1082	200	100	201			
1215	1.84 1112	7.07	116	20.2			
1220	1.95 1131	7.25	122	20.3		Notiad 0	O increasing
1225	1.94 1140	7.19	126	20.3		Turnod p	essure down
1230	2.08 1146	6.67	131	20.4		but wate	r stepped iumn
1235	2.10 1154	6.70	134	20.3	·	HALSSINNE SO	A 35 PST
1240	2.22 1155	67.12	13/	20.4		LUNSUNG IF	fault with
1242	Sampled	0 10	142	20.4		Nater.	TINCTUGTING
J	2 stripter.					Checked	OVODES.
Comments:	2	1				call	NOHIDIC
Odour:	🚺 no 🔲 yes if yes		Sheen	🔀 no 🛛	yes if	yes	
	Turbidity Start: Clear				нн ^в	Very Silty	
	Turbidity End: Clear	11111111	<u>, , , , , , , , , , , , , , , , , , , </u>			Very Silty	
	Other: <u>COC Numbe</u>	r- (381	49-03				
BOTTLE	Type Size:	40mL 100mL 2	50mL 500mL	1L 2L 4L	Filte	ered	Preservatives
Sitel 1 PI	astic 🔀 Glass		2		Yes	🗙 No	
2 PI	astic 🔣 Glass	3			Yes	📉 No	-
3 PI	astic 🔄 Glass				Yes	No	
4 PI	astic 🔄 Glass				Yes	No	
5 PI	astic 🔄 Glass				Yes	No	
6 PI	astic 🔄 Glass				Yes	No	
7 PI	astic 🔄 Glass				Yes	No	
8 PI	astic 🔄 Glass				Yes	No	
		Golder As	ssociates				PF067 RL

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June 200

TEI	WELL NO.: LOCATION: WEATHER: MPERATURE:	MW G Bellevue Annu Sumny 22°C	H9 All	reeze	cc	JOB NO.: DMPLETED BY: DATE: TIME:	1 	Develo	pment Sample 00 CS
MONITC Depth to N Depth to B Diameter	DRING WELL INF(Water Below Top of Bottom of Well Belov Standpipe:	DRMATION Casing: v Top of Casing:		A 2.15 (B(C 50 (r	Bottown (metres) (metres)	One well volum (B-A)*2.0 = (B-A)*1.1 =	ie: litres -f litres -f	or a 51 mm (2.0 or a 38 mm (1.5	inch) diameter we inch) diameter we
EQUIPME pH C Dissolv	ENT LIST and Temp. Meter: conductivity Meter: ed Oxygen Meter: Eh Meter: Pump: Bailer:	Model <u>TPS</u> Model Model none none Yes (for meta	90 FLMV	Serial No Serial No Serial No Serial No	Waterra Waterra Stainless S	Calibration Buf Calibration Solu Type teel	fers: 🔀 4 utions: <u>2.76m</u> Perista	∑7 <u>S/cm</u> and _ Itic	10 Submersib
vVELL DE Purge volu F	VELOPMENT\PUR(ume: Well vol X low Rate:	BING =	li	tres	Method:		Ei.	leht	
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
* 1	i flid well Unsucessf diverment	to hottom	noted A hotion	voots, of well	tried to a thick	clean in socials	uth de Will e	pelspinant weter n	ell
omments	:: Odour:	no ye Furbidity Start: Furbidity End: Other: <u>CC</u>	s if yes Clear Clear OC Number -	1111111	Sheen [no[] yes if 	yes Very Silty Very Silty	
BC	DTTLE 1 Pla 2 Pla 3 Pla 4 Pla 5 Pla 6 Pla 7 Pla	Type stic Glas	Size: 4(OmL 100mL 29	50mL 500mL	1L 2L 4L 	Filte	Pred No	

Golder Associates

PF067 RLI June 200

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Ð	Golder	Ground	water De	velopment	t and Pur	ging/Sam	oling Data	a Sheet
TEN	WELL NO.: LOCATION: WEATHER: IPERATURE:	Bellevue Ann Ovevc 18°C	54 nual ost, roù	ning	C	JOB NC COMPLETED B DATI TIMI	D.:1 Y: E:	Purge/Sample 17643092 tsk 8000 kc 5V 14/6 12 15-25
ΜΟΝΙΤΟ	RING WELL INF	ORMATION		10.00		One well volu	me:	
Depth to V	Vater Below Top of	Casing:		A_10-90	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0 inch) diameter well
Depth to E	Bottom of Well Belo	w Top of Casin	g:	В	(metres)	(B-A)*1.1 =	litres -1	or a 38 mm (1.5 inch) diameter well
Diameter	Standpipe:			C(mm)			
EQUIPME	INT LIST							
pН	and Temp. Meter:	Model TP:	S 90 FLMV	Serial No.		Calibration Bu	uffers: 🔀4	⊠7 □10
С	onductivity Meter:	Model	n	Serial No.		Calibration So	olutions: <u>2.76m</u>	S/cm and
Dissolve	ed Oxygen Meter:	Model		Serial No.				
	Eh Meter:	Model		Serial No.	-	Туре		
	Pump:	none none Yes (for me	tals)		Waterra Stainless No	Steel	Perista	altic X Submersible
WELL DEV		GING						
Purge volu	ime: Well vol X	hris		litres	Method:			
F	low Rate:	WAR IOU IN	L/min \	/olume	Start:		Fi	nish:
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS
Stabilisati	ion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		
1530		3.36	475	6.67	129	19.8	1	DD 11:00 mblox
1535		3.45	471	665	129	20.4		
1540		2.99	436	6159	129	20.8		
1540							-	Storm Cell
16:01		3.31	429	6.54	135	18-3		
16:06		3-21	449	6.53	132	18 8		Aroundown, MUI
16:11		3.56	468	6.56	131	197	1	lower flow mat
16:16		445	472	6.60	130	19.6		

Udoi	ur: Loo no Turbidit Turbidit Other:	y Start: C y End: C <u>COC</u>	ifyes lear lear Number	× 28/4	Sheen I	△ no ⊃ ¶		yes if yes Very Silty Very Silty	
BOTTLE	Туре		Size: 40mL 100m	L 250mL	500mL	1L 2L	4L	Filtered	Preservatives
1	Plastic	🔀 Glass		1			_	Yes X No	
2	Plastic	🔀 Glass	3					Yes 🔀 No	-
3	Plastic	Glass				22		Yes No	
4	Plastic	Glass			-			Yes No	
5	Plastic	Glass						Yes No	
6	Plastic	Glass				22		Yes No	
7	Plastic	Glass		1000				Yes No	
			and the second sec					=	

130

19.2

6.60

16:16

3-77

486

Golder Associates

Groundwater Development and Purging/Sampling Data Sheet

D	Associates	S	~7				-	Develo	opment /Sample
	WELL NO.:	MW6 S	+			JOB NO	.: <u>1'</u>	1764 <u>3092 tsk 80</u>	000
		Bellevue Ann	ual		С	OMPLETED BY		ylilis	
TEN	WEATHER:	170	1001			DATE		FMD FMD	
		OPMATION				One well welve			
Denth to V	Vater Below Top of	Casing:		A 11-58	(metres)	(B-A)*2.0 =	litres -f	or a 51 mm (2.0) inch) diameter we
Denth to P	ottom of Well Belov	w Top of Casing	ı.	B	(metres)	(B-A)*1 1 =	litres -f	or a 38 mm (1.5	inch) diameter we
Diameter \$	Standpipe:		j.	C 50 (mm)				
	NT LIST								
рH	and Temp. Meter:	Model TPS	5 90 FLMV	Serial No.	V6457	Calibration Bu	iffers: 🖂4	7	<u> </u> 10
c	onductivity Meter:	Model	IJ	Serial No.	45	Calibration So	lutions: <u>2.76m</u>	S/cm and	
Dissolv	ed Oxygen Meter:	Model		Serial No.	24				
	Eh Meter:	Model		Serial No.		Туре			
	Pump:	none		Γ	Waterra		Perista	litic	Submersibl
_	Bailer:			Ē	 Stainless S	Steel	Teflon		PVC
	Filter:	Yes (for met	als)		No				
VELL DE	VELOPMENT\PUR	GING					N 4 4		
Purge volu	ime: Well vol X	# .		itres	Method:	Subm	ersible		
F	low Rate:	180 m	L/min Vo	lume	_ Start:	0830	Fi	nish:	
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisat	ion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		DD 11-61	8
2838		4.46 ppm	716.45	522	182	17-5			
2843		3.87	+22	5.21	187	18.5			
846		3.61	120	5.19	191	17.5			
333		347	726	5.21	199	19.6			
403		3.52	725	5-22	202	19.5			
908		3.38	725	5.22	204	19.5			
-									
					-				
						1			
omments	s: Odour: [no y Turbidity Start Turbidity End: Other:	ves if yes Clear Clear COC Number	- Q8148	Sheen	₽ no 	□ yes i 	f yes Very Silty Very Silty	
			-						
BC	OTTLE	Туре	Size: 4	10mL 100mL 2	250mL 500ml	. 1L 2L 4L	Filt	ered	Preservatives
	1 Suite □P	lastic GI	ass		_ 2		Yes	No	
	2P	lastic 🛛 🗹 GI	ass	<u>s </u>			- Yes	No	-
	3 ЦР	lastic 🔲 GI	ass				Yes	No	
	4 UP	lastic 🔲 GI	ass				Yes	No	
	5 <u></u> P	lastic 🔄 GI	ass				_ ∐Yes	∐ No □	
	6 UP	lastic 🔄 GI	ass				Yes	[] N0	
	6 P 7 P	lastic GI	ass		= =		Yes		

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June 2

Groundwater Development and Purging/Sampling Data Sheet

TE	WELL NO.: LOCATION: WEATHER: MPERATURE:	S NWA Bellevue An Sunni 20°C	<u>sq</u> Inual		c	JOB NC COMPLETED B DATE TIME	0.:1 7: 5:	□ Developme	ent ple
MONITO	RING WELL INF	ORMATION				One well volu	me:		
Depth to N Depth to I Diameter	Water Below Top of Bottom of Well Belo Standpipe:	f Casing: ww Top of Casir	ng:	A <u>12.04</u> B C <u>50</u> ((metres) (metres) mm)	(B-A)*2.0 = (B-A)*1.1 =	litres -1 litres -1	or a 51 mm (2.0 inch) or a 38 mm (1.5 inch)	diameter wel diameter wel
EQUIPME pH C Dissolv	ENT LIST and Temp. Meter: Conductivity Meter: red Oxygen Meter: Eh Meter:	Model _TF Model Model Model	² S 90 FLMV "" "	Serial No. Serial No. Serial No. Serial No.	V&45 11 11	Calibration Bu Calibration Sc Type	uffers: X4 olutions: <u>2.76rr</u>	∑7 S/cm and]10
	Pump: Bailer: Filter:	none ⊠ none ⊠ Yes (for me	etals)		Waterra Stainless No	Steel	Perista		Submersible PVC
vvELL DE Purge volu	VELOPMENT\PUR ume: Well vol X	GING =		litres	Method:	2			
F	low Rate:	1.20 m	L/min V	olume	_ Start:		Fi	nish:	
TIME	REMOVED (L)	(mg/L) or %	(uS/cm)	(UNITS)	Eh (mV)	TEMP (°C)	(m btoc)	REMARKS	
Stabilisa 15 23 15 28 15 38 15 38 15 38 15 43 15 43 15 58	lion Range	+/-10% 3.07 2.78 2.27 1.94 1.67 1.53 1.37 1.26	+1-5% 1071 1075 1076 1081 1078 1078 1078	+/-0.1 3:33 5:30 5.28 5.27 5.27 5.27 5.27 5.27	+/- 10 171 165 166 166 166 167 170 170 173 176	+/- 0.5 21 · 6 21 · 3 21 · 2 21 · 2 21 · 1 21 · 1 21 · 1 21 · 0		20 12/2014	12-14
.)									
Comments	: Odour: 🗋	Turbidity Start Turbidity End: Other:	yes if yes : Clear Clear :OC Number		Sheen X - G	☑ _{no} S	☐ yes if 	yes Very Silty Very Silty	
BC	DTTLE 1 Pla 2 Pla 3 Pla 4 Pla 5 Pla 6 Pla	Type astic GI astic GI astic GI astic GI astic GI astic GI	Size: - ass ass ass ass ass	40mL 100mL 24	50mL 500ml	. 1L 2L 4L 	Filte	Pred Pr No	eservatives
	7 Pla	astic Gli	ass						

Golder	Groundwater D	evelopmen	t and Purg	ging/Samp	oling Data	a Sheet
Associate	s					Development
WELL NO.:	MWG60			JOB NO.	.:1	17643092 tsk 8000
LOCATION:	Bellevue Annual		C	OMPLETED BY	54/	KC
WEATHER:	Cal			DATE	21/	6/12
TEMPERATURE:	12°			TIME	1120	7
MONITORING WELL INF	ORMATION			One well volur	me:	
Depth to Water Below Top of	Casing:	A 1 39	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0 inch) diameter well
Depth to Bottom of Well Belo	w Top of Casing:	В	(metres)	(B-A)*1.1 =	litres -1	for a 38 mm (1.5 inch) diameter well
Diameter Standpipe:		C 50	(mm)			(
EQUIPMENT LIST			. ,			
pH and Temp. Meter:	Model TPS 90 FLMV	Serial No	14566	Calibration Bu		
Conductivity Meter:	Model "	Serial No		Calibration Sol	lutions: 2.76m	S/cm and
Dissolved Oxygen Meter:	Model "	- Serial No.	11	Calibration Co	2.701	
Eh Meter:	Model "	Serial No.	**	Type		
Rump:		[1)00	P. De inte	
Bailor:		ί Γ		Mara I		
Eiltor		Ļ		leel		
		L				
	GING	litera e	Mathematic			
	200	_ litres	Method:			
		volume	Start:		F/	nish:
TIME REMOVED (L)	DISS O ₂ COND. (mg/L) or % (uS/cm)	(UNITS)	Eh	TEMP	(m btoc)	REMARKS
Otabilitatilas Dassa		(01110)	(mV)	(0)	(in otes)	DDSel @ 1.49m blac
Stabilisation Range	2.00 +/- 5%	+/- 0.1	+/- 10	+/- 0.5		
11:37	0.92 1710	617	-2 Vi	17.9		
11:42	0.47 1696	6.17	4 mV	18.6	1	
11:47	0.42 1712	6.17	2	18.6		
11:52	0.29 1744	6.16	- 2ml	18.6		
11:57	0.24 1784	6.14	-15mV	18.6		
12.02	0.21 1790	6.14	-15 av	18-7		
		-				
		-				
Comments: Odour:	no Y yes if yes Turbidity Start: Clear Turbidity End: Clear Other: <u>COC Numb</u>	slight organ IIIIIIM er-Qasc k suspenciec	1 Sheen [x no [yes if	Very Silty Very Silty Very Silty SFCTAFES
BOTTLE	Type Size	40ml 100ml 4	250ml 500ml	1 2 1	ALS	Proconciluos
Suite 3 1 XIPI	SIZE	- 40ML 100ML 3		(5) AL		No 4 2 H()
		5 (2.100	der 2x A	(5)	Vac	
	01255				L_Ires	

Golder Associates

J	Associate	s 14W62				JOB NO	.:1	Develo [2013] Develo [2013] Purge/ 17643092 tsk 86	opment /Sample 000
		Bellevue An	nual 70		C	OMPLETED BY	- SV	112	
TE	MPERATURE:	160	<u>y</u>				692	<u>116</u>	
				27				0	
Depth to	Water Below Top of	f Casing:		ATOMA	(metres)	(B-A)*2 0 =	litres -f	or a 51 mm (2.0) inch) diameter w
Depth to	Bottom of Well Belo	w Top of Casir	g:	B	(metres)	(B-A)*1.1 =	litres -f	or a 38 mm (1.5	inch) diameter w
Diameter	Standpipe:			C(mm)				
EQUIPM	ENT LIST								
pН	and Temp. Meter:	Model TP	S 90 FLMV	Serial No.	V6457	_ Calibration Bu	ffers: 🔀4	7	10
(Conductivity Meter:	Model		Serial No.	-1	Calibration So	lutions: 2.76m	S/cm and	
Dissol	ved Oxygen Meter:	Model	<u> </u>	Serial No.					
	Eh Meter:	Model		Serial No.		Туре			-
	Pump:	none			Waterra		Perista	altic	Submersib
	Bailer:		eri.	-	Stainless \$	Steel	Teflon		PVC
		Yes (for me	tals)		No				
vell De Purae vol		-		litras	Mathod	subn	resoble		
lango voi	Flow Rate:	160	L/min V	olume	Start:	1)941)		nish:	
	VOLUME	DISS O ₂	COND	nH		TEMP	Water Level	REMARKS	
TIME	REMOVED (L)	(mg/L) or %	(uS/cm)	(UNITS)	(mV)	(°C)	(m btoc)	INE MARKO	
Stabilisa	tion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5			
944		3.10	624	4:48	129	18.2	7.27		
144		2.13	288	4.93	135	18-6			
150		2.75	630	5.03	155	18.7			
104	4	2.72	519	5.07	138	18.7			
100		2.77	519	5.07	147	18-7	1		
14		2-93	525	5.13	116	18.7.			
		-							
				1			<u>}-</u>		
1									
					1		1.		
mment	s: Odour: 🛽	no , Turbidity Start Turbidity End: Other:	res if yes Clear Clear OC Number	- Q81	Sheen *1 7 -0 \	no !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	☐ yes if 	yes Very Silty Very Silty	
B	OTTLE	Туре	Size: 4	40mL 100ml 2	50mL 500ml	11 21 41	Filte	ared	Preservative
	1 🗍 PI	astic 🗹 GI	ass	3			Yes	No	11000110410
	2 PI	astic 🔲 GI	ass	<u>\$1</u>		222	Yes	No	
	з 🗸 рі	astic 📃 Gl	ass				Yes	No	Hei
	4 <u>V</u> PI	astic 📃 GI	ass	<u> </u>			Yes	No	HNO3
	5 L_PI	astic 🔄 Gl	ass				Yes	∐ No	
		astic Gl	ass				∐ Yes	∐ No	
		astic Gl	ass				∐Yes	∐ No	-
	8 1 101	astic L L/24	200				1 Mar		

PF067	R	L	l
June	20	0	1

TEN	WELL NO.: LOCATION: WEATHER:	S AUW 63 Bellevue Ann Leon Br	yai Velzy		с	JOB NO OMPLETED BY DATE TIME	$\frac{1}{5V}$	Devel Purge 17643092 tsk 8 2/12	opment /Sample 000
MONUTO		0 ODMATION		_		I IME		0	
Depth to V	AING WELL INFO			8715	las and a	One well volu	me:		
Depth to P	ottom of Well Belov	v Ton of Casing		P	(metres)	(B-A)*2.0 =	litres -1	or a 51 mm (2.0	J inch) diameter well
Diameter S	standnine:	v rop or casing	ļ,	C 50 /	(metres)	(B-A) 1.1 =	Iltres -	or a 38 mm (1.	o inch) diameter well
				0(nin)				
pH : Co Dissolve	and Temp. Meter: onductivity Meter: ed Oxygen Meter:	Model <u>TPS</u> Model Model	8 90 FLMV	Serial No Serial No Serial No.	V6457	_ Calibration Bu _ Calibration So	lffers: ⊠4 lutions: <u>2.76m</u>	∑7 n <u>S/cm</u> and	<u>10</u>
	Eh Meter:	Model		Serial No.	11	Туре			
i 	Pump: 2 Bailer: 2 Filter: 2	☐ none ☑ none ☑ Yes (for meta	als)		Waterra Stainless S No	Steel	Perista	iltic	Submersible
VELL DE	ELOPMENT	GING				Culo	John		
^o urge volu	me: Well vol X			itres	Method:	Jubi	nersi pie	_	
FI	ow Rate:	<u>280 m</u> L	/min Vo	lume	Start:		Fii	nish:	
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m bloc)	REMARKS	
Stabilisati	on Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5	2		
1:10		SHOP	53145	5.20	139	19.0	8.41	8.5	1 DD
1:15		2.20	538	521	145	19.4.		8.61	lovered.
1:25	-	2 02	532	5.18	168	19.5		_	ran
1:30		2.59	529	5.16	169	101.8			0
1:35		2.17	529	5.14	190	19.9			
1.40		1.79	529	5.14	203	19.9			
.45		1.63	529	5-14	204	19.9			
1					4				
omments:	Odour: 🛛	(no ye Turbidity Start: Turbidity End: Other: <u>C(</u>	os if yes Clear Clear DC Number	11111 MI 11111111 - Q8147-	Sheen 1 02	⊠ no 	☐ yes if 	yes Very Silty Very Silty	
BO	TTLE 1 Pla 2 VPla	Type stic Gla stic Gla	Size: 4 ss ss	0mL 100mL 29	50mL 500mL	1L 2L 4L	Filte	Pred No No	Preservatives
	3 VPla 4 VPla 5 Pla	stic Gla stic Gla stic Gla	\$\$ _ \$\$ _ \$\$ _				Ves Ves Ves	No No No	HWO3
		stic Gla	55 - 55 -		22		Yes		

Golder Associates

	Golder	Ground	lwater Dev	velopmen	t and Pur	ging/Sam	pling Data	a Sheet	
	Associate	s Nazi				JOB NO	. 1	Developm	ent nple
		Bellevue Ani	nual		С	OMPLETED B	r: SV	1 ICC	
	WEATHER:	losdy , ra	ining			DATE	201	6/12	
TEN		150				TIME	0845		
MONITO	RING WELL INF	ORMATION				One well volu	me:		
Depth to V	Vater Below Top of	Casing:		A 11.07	(metres)	(B-A)*2.0 =	litres -1	or a 51 mm (2.0 incl	1) diameter well
Depth to E	Bottom of Well Belov	v Top of Casin	a:	В	(metres)	(B-A)*1 1 =	litres -f	or a 38 mm (1.5 incl	1) diameter well
Diameter	Standpipe:		•	C 50	(mm)	(
FOUIPME	NTLIST				, ,				
DH	and Temp Meter	Model TP	S 90 EL MV	Serial No.	V6457	Calibration R			710
	and remp. Meter:	Model	"	Serial No.		Calibration Sc	ulutions: 2.76m		
Dissolv	red Oxygen Meter:	Model		Sorial No.			Julions. <u>2.701</u>		
	Eh Meter	Model		Serial No.		-			
	Bump: F			F	 				7
	Bailer:			L	vvaterra	Charal	Perista		
	Eilter		4-1->		Stainless :	Steel		L	
		J Tes (Ior me	uals)						
Purgo volu				-	Mathead	Subo	on vibla		
Purge voit	Ime: well vol X	100 ml	Elmin Ma	litres	Method:	UVUIN	ewine		
	low Rate:	TO CALC	⊾/min vo		Start:		FI	nish:	
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisat	ion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		DD set at	11.17
0853		3.71	2349	6.84	-41	15.7		grey with	black
08-38		-+0	2.49ms	6.93	-86	17.7		" suspended	Seliment
0903		265	2.48	7.00	- 86	18.4		- Sime DD all	citing 1
10100		2 5k	242ms	7.01	- 30	18.5		De la cate	reanted
CALX .		2 54	2.48	705	- 98	127	-	100501001	.30
0923		2.41	2.47ms	7.05	- 90	17.9		Contra O	
		(S							
	N						1		
							1		
				-					
Comments	: Odour:	no Turbidity Start: Turbidity End: Other: <u>C</u>	ves if yes : Clear Clear :OC Number	Hong. Childucal - Q9501-	Sheen	⊔ no אווווווו וווווווווו בוווווווווווווו	」	f yes Very Silty Very Silty	
BC	DTTLE	Туре	Size: 4	0mL 100mL 2	250mL 500mL	- 1L 2L 4L	Filte	ered	Preservatives
Suite 2	1 <u></u> Pla	astic 🔀 GI	ass		4		Yes	<u> </u>	
A	2Pla	astic 🔟 Gl	ass	6			Yes	No	
du ?	3 🔀 Pla	astic 🔄 Gl	ass	<u> </u>			Yes	No	
(T)	4Pla	astic 📃 Gl	ass	·			Yes	<u> </u>	
	5 🔄 Pla	astic 📃 Gla	ass				Yes	<u> </u>	
	6 <u>P</u> la	astic 🔄 Gla	ass				Yes	No	
	7 🔤 Pla	astic 🔄 Gla	ass				Yes	No	
	8 Pla	astic 🔄 Gla	ass				Yes	No	
				Golder A	ssociates				PF067 F

MONITORING WELL INFORMATION One well volume: Discrete Depth to Water Below Top of Casing: A []_0\$ (metres) (B-A)*2.0 =	lopment 3/Sample 3000
Depth to Water Below Top of Casing: A []_(b)\$ (metres) (B-A)*2.0 =	
Depth to Bottom of Well Below Top of Casing: B	0 inch) diameter w
Diameter Standpipe: C50(mm) EQUIPMENT LIST pH and Temp. Neter: Model TPS 90 FLMV Serial NoCalibration Buffers: [2] 4 [2] 7 Conductivity Meter: Model Sarial NoCalibration Buffers: [2] 4 [2] 7 Calibration Buffers: [2] 4 [2] 7 Dissolved Oxygen Meter: Model Sarial No Calibration Buffers: [2] 4 [2] 7 Dissolved Oxygen Meter: Model Serial No Calibration Buffers: [2] 4 [2] 7 Pump: Inone	.5 inch) diameter we
EQUIPMENT LIST pH and Temp. Meter: ModelTPS 90 FLMV Serial NoVGYS_7 Calibration Buffers: ⊠47 Conductivity Meter: Model Serial NoV Calibration Buffers: ⊠47 Dissolved Oxygen Meter: Model Serial NoV Calibration Solutions: 2.76mS/cm and Dissolved Oxygen Meter: Model Serial NoV Type Pump: none Waterra Peristaltic Bailer: None Stainless Steel Teflon Filter: Yes (for metals) No No vVELL DEVELOPMENTPURGING Purge volume: Wellvol X =	,
pH and Temp. Meter: Model TPS 90 FLMV Serial NoCalibration Buffers: [] 4 [] 7 Conductivity Meter: Model *Serial NoCalibration Solutions: 2.76mS/cm and Dissolved Oxygen Meter: Model *Serial NoType Eh Meter: Model *Serial NoType Pump: none Stainless Steel Type Pump: none Stainless Steel Tefton Filter: Y es (for metals) No No wVELL DEVELOPMENTPURGING Purge volume: Well vol X =	
Conductivity Meter: Model " Serial No. Serial No. Calibration Solutions: 2.76mS/cm and Dissolved Oxygen Meter: Model " Serial No. *' Type	10
Dissolved Oxygen Meter: Model * Serial No. * Type Pump: none Waterra Peristaltic Bailer: None Stainless Steel Tefton Filter: Yes (for metals) No No wvELL DEVELOPMENTPURGING * * Flow Rate: Stainless Steel Tefton Flow Rate: Soft / Umin Volume Start: Finish: * TIME VOLUME DISS 0; COND. pH Eh TEMP Water Level REMARKS Stabilisation Range +/-10% +/-5% +/-0.1 +/-10 +/-0.5 DD serce 317 I.4% IIST G.12 G.5% 2/, % . . 317 I.4% IIST G.12 G.6% 2/, % . . . 317 I.4% IIST G.12 G.6% 2/, % 317 I.4% IIST G.24 9.8 2/, % 317	
Eh Meter: Model	
Pump: none Waterra Peristalitic Bailer: None Stainless Steel Tefton Filter: Yes (for metals) No weELL DEVELOPMENT/PURGING Purge volume: Well vol X Flow Rate: Image: Stainless Steel Tefton TIME VOLUME L/min Volume Start: Finish: TIME VOLUME Image: Start Image: Start Finish:	
vvELL DEVELOPMENTIPURGING Purge volume: Well vol X	Submersibl
Purge volume: Well vol X Itres Method: Flow Rate: L/min Volume Start: Finish: TIME VOLUME DISS 02 COND, (us/cm) pH Eh TEMP Water Level (m bloc) REMARKS Stabilisation Range +/-10% +/-5% +/-0.1 +/-10 +/-0.5	
How Rate: Drwn Umin Volume Start: Finish: TIME VOLUME REMOVED (L) DISS 02 (mg/L) or % (mg/L) or % (us/cm) COND. (us/cm) pH (UNITS) Eh (mV) TEMP (°C) Water Level (m bloc) REMARKS Stabilisation Range +/-10% +/-5% +/-0.1 +/-10 +/-0.5	
TIME VOLUME REMOVED (L) DISS 02 (mg/L) or % COND. (uS/cm) PH (UNITS) Eh (mV) TEMP (°C) Water Level (m bloc) REMARKS Stabilisation Range +/-10% +/-5% +/-0.1 +/-10 +/-0.5	
Stabilisation Range +/-10% +/-5% +/-0.1 +/-10 +/-0.5 317 I.4% ISI 6.24 98 21.7 DD serce 317 I.4% ISI 6.12 69 21.8 1 3.7 I.4% ISI 6.12 69 21.8 1 3.7 D.891 I371 C.67 45 21.0 1 3.7 D.60 ISI2 6.03 32 21.2 1 3.1 D.54 ISI2 6.03 28 21.5 1 3.1 D.54 IS72 6.04 2.7 21.7 1 3.42 D.44 IS74 6.03 29 21.5 1 3.47 O.44 IS74 6.03 29 21.5 1 3.47 O.44 IS74 6.03 29 21.5 1 3.47 O.44 IS74 6.03 29 21.5 1 2.00 Ino Yes if yes 1 1 1 2.01	
21 - 2.57 2.57 2.53 6.24 4.8 21.7 DD Serce 317 1.48 1151 6.12 68 21.8	
112 0.81 1.31 1.07 4.5 21.0 312 0.32 1394 1.07 4.5 21.0 331 0.32 1394 1.07 4.5 21.0 331 0.34 1562 6.03 32 21.2 331 0.54 1562 6.03 28 21.5 342 0.49 1572 6.04 2.7 21.7 347 0.49 1572 6.04 2.7 21.7 347 0.49 1574 6.03 29 21.5 347 0.49 1574 6.04 2.7 21.7 347 0.49 1574 6.03 29 21.5 347 0.49 1574 6.03 29 21.5 347 0.49 1574 6.03 29 21.5 360 1.574 6.04 2.7 21.7 1.5 37 0.49 1574 6.04 2.9 29 1.5 3847 0.00 1.57 1.57 1.57 <td>(1.18mblic</td>	(1.18mblic
331 0.42 1376 0.02 38 31.0 32 32.0 33 331 0.54 1562 6.03 28 21.5 32 33 32 33 32 33 32 33 32 33 33 0.54 1562 6.03 28 21.5 33 32 33 32 33 32 33 32 33 33 33 33 33 32 32 33 32 33 34 <td></td>	
337 0.60 1512 6.03 32 21.5 331 0.54 1562 6.03 28 21.5 342 0.44 1572 6.04 27 21.7 347 0.44 1574 6.03 28 21.5 347 0.44 1574 6.03 29 21.7 347 0.44 1574 6.03 29 21.7 347 0.44 1574 6.03 29 21.7 347 0.44 1574 6.03 29 21.7 347 0.44 1574 6.03 29 21.7 347 0.44 1574 6.03 29 21.5 35 0.44 1574 6.03 29 21.5 36 1.57 1.57 1.57 1.57 1.57 37 0.44 1574 6.03 29 21.57 38 1.57 1.57 1.57 1.57 1.57 39 1.57 1.57 1.57 1.57 1.57	
331 0.54 1562 6.03 28 21.5	
0.49 1572 6.04 27 21.7 847 0.44 1574 6.03 29 21.5 0.44 1574 6.03 29 21.5	
S47 O.44 1574 6.03 29 21.5 Somments: Odour: Ino Image: Slight indication of the second of the sec	
comments: Odour: no Image: Second Comment Second C	
Comments: Odour: no Image: second comments Sheen She	
replaced tubite.	
BOTTLE Type Size: 40mL 100mL 250mL 1L 2L 4L Filtered	Preservatives
Image: Plastic Imag	
4 Plastic Glass Yes No	
5 Plastic Glass Yes No	
6 Plastic Glass Yes No	
7 Plastic Glass Yes No	

volder Associates

PF067 RLI June 200

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ų,
	WELL NO.: LOCATION: WEATHER:	Bellevue An	nual 1	_	С	JOB NC OMPLETED B	D.:1 Y:5 E:	Dev Purg 17643092 tsk V/KC 1/6/12	elopment ge/Sample s 8000
TE	MPERATURE:	19-				TIM	E: 12 23		
MONITO	ORING WELL INF	ORMATION		1010		One well volu	ime:		
Depth to	Water Below Top o	f Casing:		A (96)	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0 inch) diameter well
Depth to	Bottom of Well Belo	w Top of Casir	ng:	В	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1.5 inch) diameter well
Diameter	Standpipe:			C <u>50</u>	(mm)				
EQUIPMI	ENT LIST				MIGIL				
pН	and Temp. Meter:	Model <u>TP</u>	S 90 FLMV	Serial No.	V4866	Calibration Bu	uffers: 🔀 4	⊠7	10
(Conductivity Meter:	Model		Serial No.		_ Calibration So	olutions: 2.76m	nS/cm and	
Dissolv	ved Oxygen Meter:	Model		Serial No.					
	Eh Meter:	Model		Serial No.		Туре			
	Pump: Bailer: Filter:	none ⊠ none ⊠ Yes (for me	etals)		Waterra Stainless	Steel	Perista	altic	Submersible
WELL DE		GING	10				1000		
Purge vol	ume: Well vol X	=		litres	Method:	peri 1	amp.		
F	Flow Rate:	RSOM	L/min \	/olume	Start:	1730	Fi	nish:	
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	t i
Stabilisa	tion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		culphur	oder dear
1233		1,94	79245	5.89	-33	18.2		Service	
1238		0,SZ	706 US	5.80	-64	19.2			
1243	-	0.35	702	5.78	-71	19.3			
1248		0.19	101	5.18	- 15	19.9			
1253		0.14	671	7530	SO	19.5			
1307		DIU	698	578	- 01	19%		1	
04.3	1	1 cm	- 10	2.10		11.6		1	
1									
Comments	s: Odour: [no Turbidity Start Turbidity End: Other: <u>C</u>	yes if yes : Clear Clear COC Numbe	<u>solphune</u> 11111111 11111111 <u>r-09507</u> 99504	Sheen -06 -62	1111111 1111111 (565 - 5	yes ii €?*/Fe3	f yes Very Silty Very Silty	
BC	1 Leater / DP	Type lastic 🔽 Gl	Size: ass	40mL 100mL 2	250mL 500mL	. 1L 2L 4L	Filte	ered	Preservatives
	tite / MPI	lastic 🔄 GI	ass				Yes	No	~
	3 3 (MPI	lastic 🔄 GI	ass	_ + _			Yes	No	HIND3
	4 PI	lastic 🔄 GI	ass		-		Yes	No No	HCI
	E	astic	222	1			Yes	No	
	SK C B		400	10					1
	SGS CUP	astic GI	ass	<u> </u>		222	Yes	No No	the
		astic GI	ass			222	Yes Yes	No	the

Groundwater Development and Purging/Sampling Data Sheet

	WELL NO.:	S Bellevue Ann	nual		С	JOB NO OMPLETED BY	.: <u>1</u> :: <u>5v/</u>	Development Purge/Sample 17643092 tsk 8000
	WEATHER:	File				DATE	21/	6/12
TEN		15				TIME	-132	
MONITO		ORMATION				One well volu	me:	
Depth to F	Valer below Top of	Casing: w Top of Cosin	- .	AL BOC	(metres)	(B-A)*2.0 =	litres -f	or a 51 mm (2.0 inch) diameter wel
Diameter (Standpine:	w rop or Casin	y.	D	(metres)	(B-A)*1.1 =	litres -1	or a 38 mm (1.5 inch) diameter wei
EOUIDME				C <u> </u>				
nH :	and Terrin Meter	Model TP		Sorial No.	V 4866	Collibration Ru		
pir c	onductivity Meter:	Model	"	Serial No.	4	Calibration So	litions: 276m	
Dissolve	ed Oxvgen Meter:	Model		Serial No.	u	Calibration Sc		
	Eh Meter:	Model	н	Serial No	ů.	Type		
i I	Pump:	none none			_ Waterra _ Stainless S	Steel	Perista	Iltic Submersible
		Yes (for met	als)		No			
Purge volu	MELOPMENT(PUR me: Well vol X ow Rate:		/min V	litres	Method:	Dear All	уран Паралан Па	nich:
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS
Stabilisati	on Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		CL-1 3 25 (10
1330		1.65	632	5.93	-44	18.2		
1335		0.73	627	5.71	-56	18-8		
1340		0:42	621	5.68	- 55	19.1		
134>		0.25	023	5.65	- 50	19-1		
1355		0.17	619	5-66	-63	19.4	-	
1400		0.17	619	5.66	-66	19.4		
			972					
1				-				
							17 8 C	
-								
Comments:	Odour: D	no y Turbidity Start: Turbidity End: Other: <u>C</u>	es if yes Clear Clear OC Number	- 69502	Sheen -07	⊠ no !	☐ yes if 	yes Very Silty Very Silty
Comments:	Odour: D	Turbidity Start: Turbidity End: Other: <u>C</u> Type astic Gla astic Z Gla	es if yes Clear Clear OC Number Size: 4 ass	- 09502 - 09502 - 09502 09502 	Sheen	I no I	yes if Filte (2)▼Yes Yes	yes Very Silty Very Silty ered Preservatives No HCC (1) No
Comments: BO	Odour: 2 TTLE 1 1PI: 2 1PI: 3 1PI:	Turbidity Start: Turbidity End: Other: <u>C</u> Type astic Gla astic Gla	es if yes Clear Clear OC Number Size: 4 ass ass ass	0mL 100mL 23	Sheen	IL 2L 4L	yes if	yes Very Silty Very Silty Preservatives No No No
Comments: BO	Odour: 5	Turbidity Start: Turbidity End: Other: <u>C</u> Type astic Gla astic Gla astic Gla	es if yes Clear Clear OC Number Size: 4 ass ass ass ass	0mL 100mL 29	Sheen	1L 2L 4L	yes if	yes Very Silty Very Silty Preservatives No No No No
Comments: BO	Odour: 2 TTLE 1 2 Pi 3 Pi 4 Pi 5 Pi	Turbidity Start: Turbidity End: Other: <u>C</u> Type astic Gla astic Gla astic Gla astic Gla astic Gla	es if yes Clear Clear OC Number Size: 4 ass ass ass ass ass ass	- 09502 0mL 100mL 29 3	Sheen	IL 2L 4L	yes if	yes
BO	Odour: 2	Turbidity Start: Turbidity End: Other: <u>C</u> Type astic Gla astic Gla astic Gla astic Gla astic Gla astic Gla	es if yes Clear Clear OC Number Size: 4 ass ass ass ass ass ass ass	- 09502 0mL 100mL 29 3 3	Sheen	L 2L 4L	yes if	yes
BO	Odour: 2	Ino y Turbidity Start: Turbidity End: Other: C Type astic Gla astic Gla	es if yes Clear Clear OC Number Size: 4 ass ass ass ass ass ass ass ass ass as	- 09502 0mL 100mL 29 3	Sheen	L 2L 4L	yes if	yes

WELL NO.: LOCATION: WEATHER: TEMPERATURE:	Ground ES <u>MW669</u> Bellevue Ar CIS	nual °C Nercast	velopmen	t and Pu	JOB NO JOB NO COMPLETED BY DATE TIME	pling Data $\begin{array}{c} 1\\ \hline \\ $	a Sheet □ Develo ○ Purge, 17643092 tsk 80 16/12 V 2:50	opment /Sample 000
MONITORING WELL IN Depth to Water Below Top of Depth to Bottom of Well Bel Diameter Standpipe:	MONITORING WELL INFORMATION Depth to Water Below Top of Casing: Depth to Bottom of Well Below Top of Casing: Diameter Standpipe:				One well volu (B-A)*2.0 = (B-A)*1.1 =	me: litres -1 litres -1	for a 51 mm (2.0 for a 38 mm (1.5	inch) diameter wel inch) diameter wel
EQUIPMENT LIST pH and Temp. Meter: Conductivity Meter: Dissolved Oxygen Meter: Eh Meter: Pump: Bailer: Filter:	ModelTF Model Model Model none Mone Yes (for me	'S 90 FLMV" 	Serial No. Serial No. Serial No. Serial No.	V 6457	_ Calibration Bu _ Calibration So _ _ Type Steel	uffers: 24 Inductions: 2.76m Perista	∑7 n <u>S/cm</u> and attic	10 U Submersible PVC
Purge volume: Well vol X			litres	Method:				
Flow Rate:	240 m	L/min V	olume	Start:		Fii	nish:	
TIME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
1311 1322 1327 1322 1337 1342 1347 1347 1352 1357	4.62 3.85 3.13 2.61 2.32 2.02 1.16 1.63 1.51	611 624 632 634 634 634 635 635 635	5.82 5.82 5.82 5.82 5.82 5.82 5.82 5.82	++-10 141 139 140 147 147 131 131 134 157 160	+1-0.5 19-7 20-5 20-8 20-8 20-8 20-7 20-8 20-8 20-8 20-8 20-8 20-8 20-8 20-9 20-9		-)×t@	12.27mbti
Comments: Odour:	no y Turbidity Start: Turbidity End: Other:C	res if yes Clear Clear OC Number	- - 8147-	Sheen		yes if	yes Very Silty Very Silty	•
BOTTLE 1 P 2 P 3 P 4 P 5 P 6 P 7 P 8 P	Type	Size: 4 ass ass ass ass ass ass ass ass ass as	40mL 100mL 2	50mL 500ml	- 1L 2L 4L 	Filte Yes Yes Yes Yes Yes Yes Yes	No No No No No No No	Preservatives

WELL NO.: LOCATION: WEATHER: TEMPERATURE:	Bellevue Ar Cloudy	10 Innual			JOB NO COMPLETED B DAT TIM	$\begin{array}{c c} D_{11} & 1 \\ Y_{11} & 5 \\ F_{11} & 1 \\ F_{11} & 1 \\ F_{11} & 2 \\ F_{11} & 2 \\ \end{array}$	Developm	nent mple
IONITORING WELL IN epth to Water Below Top o epth to Bottom of Well Be ameter Standpipe:	a <u>12.215</u> B C_ <u>50</u>	One well volume: A 12.225 (metres) (B-A)*2.0 = litres -for a 51 mm (2.0 inch) diam B (metres) (B-A)*1.1 = litres -for a 38 mm (1.5 inch) diam C 50 (mm) 50 (mm)						
QUIPMENT LIST pH and Temp. Meter: Conductivity Meter: Dissolved Oxygen Meter: Eh Meter: Pump: Bailer: Filter:	Model <u>TF</u> Model Model none none Yee (for model	2S 90 FLMV	Serial No. Serial No. Serial No. Serial No. [[V6451 11 11 Waterra Stainless	_ Calibration B _ Calibration S _ Type Steel	uffers: 2.76m plutions: 2.76m	S/cm and]10]Submersible]PVC
ELL DEVELOPMENT\PUI	RGING	alais)						
rge volume: Well vol X Flow Rate:	250		_ litres /olume	Method: Start:	1	Fi	nîsh:	
TIME VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh	TEMP (°C)	Water Level (m btoc)	REMARKS	
tabilisation Range 48 53 58 58 58 58 58 58 58 58 58 58	+/-10% 3-94 3-35 4.35 4.97 4.90 3.21 2-80 2.61	+1-5% 693 701 692 692 691 691 691 691	+/-0.1 5.42 5.38 5.41 5.43 5.43 5.33 5.33 5.33 5.33 5.33	+/-10 165 166 167 168 170 173 174 174	+1-0.5 19-9 20.7 21.2 20.8 20.5 20.7 20.8 20.8		DD moder bables noted, la	12-31
nments:		//PS if vec		Share				
	Turbidity Start Turbidity End: Other:	: Clear Clear Clear				 	Very Silty Very Silty	
BOTTLE 1 P 2 P 3 P 4 P 5 P 6 P 7 P	Type lastic GI lastic GI lastic GI lastic GI lastic GI lastic GI lastic GI	Size: ass ass ass ass ass ass ass	40mL 100mL 2	250mL 500ml 2 	- 1L 2L 4L 	Filte	red F No No No No No No	Preservatives

PF00/	RLI	
June	200	

	WELL NO.: LOCATION: WEATHER:	Bellevue Ar Roumine	aana muual		C	JOB NO COMPLETED B DATE).:1 /:	Develo	opment Sample ⋈
TEN	MPERATURE:	Lorc	5			TIME	:	14:00	
MONITO	RING WELL INF	ORMATION				One well volu	me:		
Depth to V	Vater Below Top o	f Casing:		A_11.74	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0	inch) diameter
Depth to E	Bottom of Well Belo	ow Top of Casi	ng:	В	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1.5	inch) diameter
Diameter	Standpipe:			C <u>50</u> (mm)				
QUIPME	NT LIST				10000				
pН	and Temp. Meter:	Model TF	S 90 FLMV	Serial No.	V6457	Calibration Bu	iffers: 🔀4	7	10
C	onductivity Meter:	Model	"	Serial No.	NI.	Calibration So	lutions: 2.76n	<u>nS/cm</u> and	
Dissolv	ed Oxygen Meter:	Model		Serial No.					
	Eh Meter:	Model		Serial No.		Туре			
I	Pump:	none		Ē	Waterra		Perista	altic	Submers
	Bailer:				Stainless S	Steel	Teflon		PVC
	-ilter:	Yes (for me	itals)		No				
ELL DE	/ELOPMENT\PUR	GING							
rge volu	me: Well vol X	120		litres	Method:				
	ow Rate:		L/min Vo	olume	Start:			nish:	
TIME	REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisati	on Range	pp+/- 10%	+/- 5% W	+/- 0.1	+/- 10	+/- 0.5			_
· 62		6.08	828	6.08	133 mV	19.4 %		DD 11-81	
117		2.66	500	607	140	196			
1:22		2.12	842	5.90	143	10.7			
1:27		1.92	840	5.00	147	20.2			
32	and the second second	1-85	841	5.891	148	20.3			
. 51		1.79	840	5.39	151	20.3			
-									
				1947					
						2			
innents.	Odour: 🖄	no y Turbidity Start: Turbidity End: Other: <u>C</u>	es if yes Clear Clear OC Number	ПП 800 ПИППП - С 5149	Sheen 	⊠no [yes if	yes Very Silty Very Silty	
BOT		Туре	Size: 40	0mL 100mL 25	50mL 500mL	1L 2L 4L	Filte	red	Preservative
	1Pla	astic 🔀 Gla	ass –		L		Yes	No No	
:		astic 🔣 Gla	iss	<u>s </u>			Yes	No No	
:		astic 📋 Gla	iss _				Yes	No No	
4		astic 📙 Gla	iss –				Yes	No No	
ť		astic 📋 Gla	iss —			<u> </u>	Yes	No No	
6		astic [_] Gla	iss —				∐Yes	No No	
-		votio I I Cur					1 1.	1 1	
							∐Yes	<u> </u>	

Â	Golder	Ground	dwater De	velopmen	t and Pu	rging/Sam	pling Dat	a Sheet	
	Associate	S Maai	GAIR					🔛 Deve 🔀 Purge	opment e/Sample
		Bellovuo Ar				JOB NC).: <u>1</u>	17643092 tsk 8	3000
	WEATHER:					COMPLETED B	Y:	VILLID.	J
TE		IST	C			DATI		14/6/12	
		ODMATION					· · · · · · · · · · · · · · · · · · ·	4.50ar	~
Donth to	Water Bolow Ten et			117/2		One well volu	me:		
Depth to	Bottom of Wall Bolo	Casing:		A <u>11.16~</u>	_(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.	0 inch) diameter well
Diameto	r Standning:	w top of Casil	ng:	В	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1.	5 inch) diameter well
FOUIDN				C <u>50</u>	(mm)				
EQUIPM	IENILISI	NA 1 1 775			Much			<u> </u>	_
pr	Ganductivity Mater:	Model	<u>'S 90 FLMV</u>	Serial No.	Veqsi	Calibration Bu	ıffers: 🔀 4	⊠7	10
Dissol	Conductivity Meter:			Serial No.		_ Calibration So	olutions: 2.76n	<u>nS/cm</u> and	
DISSU	Eb Motor:			Serial No.	N				
				Serial No.	W	Туре			-
	Pump:	_l none ☑			Waterra		Perista	altic	Submersible
			112.00		Stainless	Steel	Teflon	1	PVC
		Yes (for me	etals)		No				
		GING		Hereiter					
Fulge vo	Flow Pate:	=		litres	Method:	-			
		40 m	L/min V	olume	Start:	- 40%	20 10115 Fi	nish:	
TIME	REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisa	ation Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5			
1030		5.92	974	6.26	182	17.5		PO 1	1.86
1035	5	6:51	494	6.35	178	17.6.		air " sec	liment in
1040	1	5.98	1001	6.38	176	17.9		line.	
1050		5.94	1003	6.38	176	11.0			
1055		5.99	1001	6.39	179	17.7			
1100		6.11	1005	6.42	176	18.0 .		air + sad	ment in
								line du	ingsamphir
			_						5-1-5
T									
Comment	s: Odour: ዾ	no y Turbidity Start: Turbidity End: Other: <u>C</u>	res if yes Clear Clear OC Number Sediment	- 08148-0	Sheen 2 Haviy	∑ no [yes if	yes Very Silty Very Silty	
BC	OTTLE	Туре	Size: 4	10mL 100ml 2	50ml 500ml	11 21 41	Eilta	red	Processie
	1 Suite 1 PM Pla		ass	Line rooma Z		4L			
	2 Pla	istic 🗗 Gla	ass	3					
	3 🗌 Pla	stic Gla	ass s						
	4 🗍 Pla	stic 🗌 Gla	iss						
	5 🗌 Pla	stic 🗌 Gla	iss						1
	6 🗍 Pla	stic 🗌 Gla	ISS				∏Yes		
	7 Pla	stic 🔄 Gla	iss				Yes		
	8 Pla	stic 🗌 Gla	ISS				Yes		
				Golder As	sociates				PF067 RI

PF067 RLI June 200

V	WELL NO.: LOCATION: WEATHER:	S MVJG Bellevue An Overce 200	nual . ast		(JOB NG COMPLETED B DAT	D.:1 Y: E:	Development Purge/Sample <u>17643092 tsk 8000</u> KC SV <u>14 6 12</u>
						TIM	E:	11.22
MONITC		ORMATION		11 1 1		One well volu	ume:	* . r
Depth to	Water Below Top of	Casing:		A 11.60	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0 inch) diameter v
Depth to I	Bottom of Well Belo	w Top of Casin	g:	В	(metres)	(B-A)*1.1 =	litres -	for a 38 mm (1.5 inch) diameter v
Diameter	Standpipe:			C0	(mm)	12		
EQUIPME	ENT LIST							
pН	and Temp. Meter:	Model TP	S 90 FLMV	Serial No.		_ Calibration B	uffers: 🔀 4	⊠7 🗌 10
C	Conductivity Meter:	Model		Serial No.		_ Calibration S	olutions: 2.76m	S/cm and
Dissolv	ved Oxygen Meter:	Model	"	Serial No.				
	Eh Meter:	Model		Serial No.		Туре		
	Pump:	none			Waterra		Perista	altic X Submersi
	Bailer:	none			Stainless	Steel	Teflon	PVC
	Filter:	Yes (for me	tals)		No			
VELL DE	VELOPMENT\PUR	GING						
urge voli	ume: Well vol X	=		litres	Method:	_		
F	low Rate:		L/min	/olume	Start:	12	:00 Fi	nish:
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS
Stabilisa	tion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		
31		5.01	538	6.15	169	19.7		00 11.78
136		4.49	\$39	5.87	194	20.1		
-41		396	534	5.76	195	20.5		
51		4.04	020	0 40	1.00	2.7		water slopped flu
256		4124	000	5.18	190	20.1		
:02		4.63	831	7.55	182	D0.7		water steppen f
.00				0			1	
11		4.63	787	7.37	199	21.3		
16		4.82	827	7.78	188	21.2		
21		4.95	832	6.05	185	20.9	1	no How issues dury
								Sampler
						1		
mments								
	Odour:	Jno LJy	es if yes		Sheen	L] no	└─ yes if	yes
		Turbidity Start:	Clear					Very Silty
		Other:	Clear			mm	1111	Very Silty
			d) number	- 0.71	40-0			
		T	CUINERUF	in white	K	_		
BO	TTLE	Туре	Size:	40mL 100mL 2	50mL 500mL	1L 2L 4L	Filte	red Preservatives
	1 MPla	istic X Gla	ISS		<u> </u>		Yes	No
		istic X Gla	ISS	5			Yes	No
	3 Pla	istic 🔄 🦲 Gla	ISS				Yes	No
	4Pla	istic 🔄 Gla	ISS				Yes	No
	5 DPla	istic 📃 Gla	SS				Yes	No
	6Pia	stic 📃 Gla	SS				Yes	No
	7 Pla	stic Gla	22					
			.00				LITes	NO

older Associates

PF067 RLI June 200

Golde	r ^{Grour} tes	ndwater D	evelopme	r* ∞ Î Pu	rging/Sar	npling Da	ata Sheet	
WELL NO.: LOCATION: WEATHER: TEMPERATURE:	Bellevue A	nnual nives			JOB N COMPLETED DA	IO.: BY: TE:	Dev Purg 117643092 tsk KC 20 (C) 12	elopment ge/Sample 8000 S V
MONITORING WELL	NEORMATION					/E:	16	15
Depth to Water Below Top Depth to Bottom of Well B Diameter Standpipe:	o of Casing: elow Top of Casi	ing:	A <u><u>5</u>.92 B</u>	_ (metres) _ (metres)	One well vol (B-A)*2.0 = (B-A)*1.1 =	lume: litres litres	-for a 51 mm (2 -for a 38 mm (1	2.0 inch) diameter we
EQUIPMENT LIST				(mm)				
pH and Temp. Mete Conductivity Mete Dissolved Oxygen Mete Eh Meter Pump: Bailer;	r: Model <u>T</u> r: Model r: Model ·: Model none	2S 90 FLMV " " "	Serial No Serial No Serial No Serial No	Vq<(!	_ Calibration B _ Calibration S Type	uffers: X4 olutions: <u>2.76</u> Perisi	∑7 <u>mS/cm</u> and tattic	10
Filter:			Ĺ	Stainless	Steel	Teflo	n	
WELL DEVELOPMENTION	Yes (for me	tals)		No				
Purge volume: Well vol X Flow Rate:	<u></u>	L/min Vo	litres olume	Method: Start:		Fi	inish:	
TIME REMOVED (L)	DISS O ₂ (mg/L) or %	COND.	pH	Eh	TEMP	Water Level	PEMADKO	
Stabilisation Range		(uo/chi)	(UNITS)	(mV)	(°C)	(m btoc)	NEWARAS	
4-20 4:25 4:35 	5.19 4.42 4.42 4.47	+1-5% 675 669 us 669	+/- 0.1 6-14 6-64 7-03 7-172	+/- 10 155mV 131 123	+/- 0.5		heavy it ,	hll
						6		
imments: Odour: 💆	no yes Turbidity Start: Turbidity End: Dther: <u>CO</u>	if yes Clear Clear C Number -	K(111111 H111111 Q9501-0	Sheen P] no [1]yes ify III ∨ III ∨	/es /ery Silty /ery Silty	
BOTTLE 1 Plas 2 Plas 3 Plas 4 Plas 5 Plas 6 Plas	Type stic Glass stic Glass stic Glass stic Glass stic Glass stic Glass	Size: 40r	mL 100mL 250	mL 500mL -	1L 2L 4L 	Filtere Yes Yes Yes Yes Yes	ed No No No No	Preservatives Preservatives Pitudo 3 Picco
7 Plas	tic Glass tic Glass tic Glass					☐Yes ☐Yes		

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PF067	RLI
June 2	2001

Groundwater Development and Purging/Sampling Data Sheet

U.	WELL NO.: LOCATION: WEATHER:	SGOL Bellevue An	nual			JOB NO. COMPLETED BY DATE		Development Purge/Sample 17643092 tsk 8000 14 C
TEI	MPERATURE:	8-				TIME	08.	40
MONITC	RING WELL INF	ORMATION				One well volur	me:	
Depth to F	Bottom of Well Belo	W Top of Casir		A P	(metres)	(B-A)*2.0 =	litres -	for a 51 mm (2.0 inch) diameter we
Diameter	Standpipe:	W TOP OF Casil	ig.	C 50 /	(metres)	(B-A)-1.1 =	litres -	for a 38 mm (1.5 inch) diameter we
EQUIPME				0				
pH C Dissolv	and Temp. Meter: conductivity Meter: ed Oxygen Meter: Eh Meter:	Model <u>TF</u> Model <u></u> Model <u></u>	" <u>"</u> " " "	Serial No. Serial No. Serial No. Serial No.	14866	Calibration But Calibration Sol	ffers: 🔀4 lutions: <u>2.76n</u>	∑7
۱ <u></u>	Pump: [Bailer: 2 Filter: 2	none	itals)		Waterra Stainless No	Steel	Perista	altic Submersible
WELL DE	VELOPMENT\PUR	GING						
Purge volu	ume: Well vol X	-		litres	Method:			
F	low Rate:	Jan L	L/min V	olume	Start:		Fi	nish:
TIME	REMOVED (L)	DISS O ₂ (mg/L) or %	COND, (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS
Stabilisat	ion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		
D843		6.70	67345	6.89	96	9.6		
0453		470	6 56.415	6.81	0 Cru	10.4		
0358		4.80 1	6.26	6.79	84	11.1		
			v . 16		4		1	
		54 (1					
		2					12	
		3			1			
Comments	odour:	Turbidity Start: Turbidity End: Other:	ves if yes : Clear ↓ Clear ★ :OC Number	-Q9502 - 0	Sheen 	11111111 11111111 11111111 11111111 1111	」yes if . ≬(₽)	f yes Very Silty Very Silty
BO		Type astic GI	Size: 4	0mL 100mL 2	50mL 500ml	. 1L 2L 4L	Filte	ered Preservatives
¥ - 1 4		astic Gl	ass	- 2 -			Yes	
		astic Gla	ass . ass .	2	= =		Yes	
ALS R.	8 Pla	istic Gla	ass _	$\frac{2}{1}$ -			Yes	
	A							

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Golder Groundwater De Associates	evelopment and Purging/Sampling Data Sheet
WELL NO .: 5607	JOB NO.: <u>117643092 tsk 8000</u>
LOCATION: Bellevue Annual	COMPLETED BY: SV, KC
WEATHER:	DATE: 21/6/12
TEMPERATURE:	TIME: 0950
MONITORING WELL INFORMATION	One well volume:
Depth to Water Below Top of Casing:	A (metres) (B-A)*2.0 = litres -for a 51 mm (2.0 inch) diameter wel
Depth to Bottom of Well Below Top of Casing:	B (metres) (B-A)*1.1 = litres -for a 38 mm (1.5 inch) diameter wel
Diameter Standpipe:	C <u>50</u> (mm)
EQUIPMENT LIST	
pH and Temp. Meter: Model <u>TPS 90 FLMV</u>	Serial No. <u>V9866</u> Calibration Buffers: 4 7 10
Conductivity Meter: Model"	Serial No Calibration Solutions: 2.76mS/cm and
Dissolved Oxygen Meter: Model	Serial No
Eh Meter: Model	Serial No Type
Pump: none	Waterra Peristaltic Submersible
Bailer: 🛛 none	Stainless Steel
Filter: Yes (for metals)	

WELL DEVELOPMENT\PURGING

Purge volu F	ume: Well vol X low Rate:	240ml a	/min V	litres olume	Method: Start:		Fi	nish:
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS
Stabilisat	ion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		
0952		6-37	622	6.87	104	11.4		
0957		511	626	6.75	95	11.7		
1002		5.06	624	6.71	96	11.7	1	
1007		4.92	622	6.68	96	11.7	J	
						100	10 F	
							1	
_					1			
1	1			-				
			-					
Comments	: Odour:	Ino ya	es ifyes Clear		Sheen		☐ yes if	yes Very Silty
		Turbidity End: Other: <u>C</u>	Clear	- Q9502	-03			Very Silty
во		Type	Size: 4	10mL 100mL 2	50mL 500mL	. 1L 2L 4L	Filte	Preservatives

No 1 Slass Yes juite Plastic 2 Glass Yes 3. 3 Plastic Glass Yes No HCL 4 Plastic Glass Yes HINO = No No 5 Plastic Glass Yes No Plastic 6 Glass Yes No 7 Plastic Glass Yes No 8 Plastic Glass Yes No

Golder Associates

PF067 RLI June 200

TEI	WELL NO.: LOCATION: WEATHER: MPERATURE:	S MW49 Bellevue Anr SKANA 18	nual		с	JOB NO OMPLETED BY DATE TIME	.:1 ::5 ::130	Develo Purge/ 17643092 tsk 80 V 12	opment /Sample
MONITO Depth to N Depth to B Diameter	ORING WELL INF Water Below Top of Bottom of Well Belo Standpipe:	ORMATION Casing: w Top of Casing	g:	A <u>12.125</u> B C50((metres) (metres) mm)	One well volu (B-A)*2.0 = (B-A)*1.1 =	me: litres -f litres -f	for a 51 mm (2.0 for a 38 mm (1.5	inch) diameter wel inch) diameter wel
EQUIPME pH C Dissolv	ENT LIST and Temp. Meter: conductivity Meter: ed Oxygen Meter: Eh Meter: Pump:	Model <u>TP</u> Model Model Model none	5 90 FLMV ""	Serial No. Serial No. Serial No. Serial No.	C. C. UMASGC	_ Calibration Bu Calibration Sc Type	Iffers: 4 Ilutions: <u>2.76m</u> Perista	∑7 n <u>S/cm</u> and	
WELL DE	Filter:	Yes (for met GING	als)	litras	No Mothod:	Scipale	naih(a		
F	low Rate:	DOME	/min Vo	olume	Start:	1155	Fi	nish:	
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)		12 18
1158 1203 1203 1208 1213 1218 1223 1228		1.66 1.06 0.50 0.63 0.57 0.57 0.52	957 45 1005 1015 1019 1019 1019 1028 1026 1026	5 4 5 74 5 75 5 75 5 75 5 75 5 75 5 75 5	143 133 131 129 129 129 130	19.4. 19.7. 20.0 20.2 20.3. 20.3. 20.4			
Comments	: Odour: 12	no ye Turbidity Start: Turbidity End: Other:C	es if yes Clear Clear DC Number		Sheen	no	☐ yes if 	yes Very Silty Very Silty	
BO Suppl	TTLE 1 Pla 2 Pla 3 Pla 4 Pla 5 Pla 6 Pla 7 Pla 8 Pla	Type astic Gla astic Gla astic Gla astic Gla astic Gla astic Gla astic Gla astic Gla astic Gla	Size: 4 SS	0mL 100mL 2	50mL 500mL	1L 2L 4L 	Filte Yes Yes Yes Yes Yes Yes Yes Yes	No No No No No No No No No	Preservatives

Golder Associates

PF067 RLI June 200

TE	WELL NO.: LOCATION: WEATHER: MPERATURE:	S Bellevue Ann GGGG	nual		C	JOB NO COMPLETED BY DATE TIME	.:1 ?:	Develo Purge/ 17643092 tsk 80	opment /Sample 000
MONITO	RING WELL INF	ORMATION				One well volu	me:		
Depth to Depth to I Diameter	Water Below Top of Bottom of Well Belo Standpipe:	Casing: w Top of Casin	g:	A 12-65	(metres) (metres) (mm)	(B-A)*2.0 = (B-A)*1.1 =	litres -f litres -f	for a 51 mm (2.0 for a 38 mm (1.5) inch) diameter well 5 inch) diameter well
EQUIPM	ENT LIST						1.1.1		
pH C Dissolv	and Temp. Meter: Conductivity Meter: red Oxygen Meter: Eh Meter:	Model <u>TP</u> Model Model Model	<u>8 90 FLMV</u> " #	Serial No. Serial No. Serial No. Serial No.	VLAD	Calibration Bu Calibration So Type	Iffers: X4	⊠7 i <u>S/cm</u> and _	10
	Pump: Bailer: Filter:	none none Yes (for me	tals)	[Waterra Stainless No	Steel	Perista	altic	Submersible
WELL DE	VELOPMENT\PUR	GING							
Purge vol	ume: Well vol X	=======================================		litres	Method:				
TIME	VOLUME REMOVED (L)	DISS O ₂ (mg/L) or %	COND. (uS/cm)	pH (UNITS)	Eh (mV)	TEMP (°C)	Water Level (m btoc)	REMARKS	
Stabilisa	tion Range	+/- 10%	+/- 5%	+/- 0.1	+/- 10	+/- 0.5		-	
11.67		5.11	329	5.94	134	THIL		1012	135
1107		4.10	620	5.78	134	19.5		-1	
IIIT	1	4 68	938	547	146	20.3		accura)
1122		428	935	5.98	145	20.6		1	
1127		4.37	929	5.98	150	20.8			
11.32		4.30	925	5.99	144	21.1			
							-	-	
)									
Comments	Odour: D	Turbidity Start: Turbidity End: Other: <u>C</u>	res if yes Clear Clear <mark>OC Number</mark>	 	Sheen	 X] no _ 	 yes if 	f yes Very Silty Very Silty	
BC	DTTLE	Туре	Size:	40mL 100mL 2	250mL 500ml	_ 1L 2L 4L	Filte	ered	Preservatives
Leech	1 Pia	astic 🔄 GI	ass		_ 2		Yes	-Nó	
5.1	∂ ∐Pk	astic 🔄 🔄 Gl	ass	3			Yes	No	
1011	3 Pla	astic 📃 Gla	ass				Yes	∐ No	
	4Pla	astic 🔄 Gla	ass				Yes	No No	
		astic 📋 Gla	ass				Yes	∐ No	
		astic [_] Gla	ass			ن نه ب	Yes	∐ No	
	' ĽIJPla	astic 📋 Gla	ISS				Yes	I I No	
	8 01	actic Con	000						









Equipment Check

Water Level/Drawdown Meter - QED MP30

Customer: Contact: Golder Associates Pty Ltd Sarah Vieillet Manufacturer: Instrument: Serial #: Cable length: QED MP30 Drawdown Meter 1677 100m

Item	Test	Pass	Comments
Battery	Voltage (9v battery)	1	Voltage above 7.9v
	Fuses, circuit board	1	
be	Decontaminated	1	
-	Condition	1	Good, clean
	Operation	1	Responding
Connectors	Condition	1	
Tape Check	Decontaminated	1	
	Checked for cuts	1	Good condition
Speaker	Operation	1	
Light	Operation	1	
Instrument Test	Water level mode	1	Surface level using tap water
	Drawdown mode	1	Surface level using tap water

This is to certify that the above instrument has been checked and is in good working order.

Calibrated by:

Daizee Wiles

Calibration Date: Next due: 02-July-2012 01-August-2012

Perth Office- Unit 6, 41 Holder Way, Malaga WA 6090 ABN 77 102 010 140

Calibration Report

Multi-Parameter Water Quality Instrument - TPS 90FLMV

Customer: Contact:	Golder Associates Pty Ltd Sarah Vieillet	Manufacturer: Instrument: Serial #: Cable length:	TPS 90FLMV V4866 5m
ltem	Test	Pass	Comments
Battery	NiCad battery	1	Voltage above 7 5v
	Fuses	1	
	Capacity	1	Holding charge
	Battery Saver	1	Turn off automatically after 1 hour if not used
Charger	Power supply	1	rum on automatically after 1 flour if flot used
Connections	Condition	1	
Cable	Condition	1	Clean no toors
Display	Operation	1	Clean, no lears
Firmware	Version	1	
Keypad	Operational	1	
Display	Screen	1	
Unit	Condition, seals and O-rings	1	
Monitor housing	Condition	1	
рН		the second	
Condition		1.	
Asymmetry range be	ween -1 00 to +1 00 pH		Good, clean
Slope range between	85.0 to 105.0 %		
Colibrated and confe			
OBB (Easton, calibra	tod no upon politications	v	
Condition	teo, no user-calibration facility)	AND AS MADE	
Quick response time	and reading as a stu		Good, clean
w/ reading 1/ 50m		*	mV
Conductivity	from value as a function of temperature	· ·	
Condition			
Tomosoture		V	Good, clean
K factor rango is ±/ 3	59/ of pominal		°C, offset range between -10.0 to +10.0 °C
Calibrated and confor	ms to manufacturor's specifications	V	k=9.26
Dissolved Oxygen	ms to manufacturer's specifications		[µs/cm, k=10 sensor
Condition		1	Good clean
DO sensor in use		1	Galvanic
Air/span calibration sp	oan range over 85%	1	
Calibrated and confor	ms to manufacturer's specifications	1	ppm

This is to certify that the above instrument has been calibrated to the following specifications:

Parameter	Standards	Reference	Calibration points	Instrument Reading
Temperature	Thermometer		Temperature (°C)	21.4 °C
pH	pH 4.00	12/2102	pH 4.00	pH 4 00
pН	pH 7.00	12/2102	pH 7.00	pH 7.00
Conductivity	2760 µs/cm at 25°C	12/2002	2760 us/cm	2760 us/cm
ORP (Reference check only)	Zobeli A and Zobell B	12/2202	232mV at 25°C	232mV
Zero Dissolved Oxygen	Sodium Sulphite Zero standard	(10)254102	Dissolved Oxygen 0.0ppm	mag 0.0
100% Dissolved Oxygen	100% air saturation	Air	Dissolved Oxygen 100%	100%

Calibrated by:

Daizee Wiles

Calibration Date: Next due:

02-July-2012 01-August-2012

(HIRE) PTY LTD

Calibration Report

Multi-Parameter Water Quality Instrument - TPS 90FLMV

Customer: Contact:	Golder Associates Sarah V	Manufacturer: Instrument: Serlal #: Cable length:	TPS 90FLMV V6457 5m
ltem	Test	Pass	Comments
Battery	NiCad battery	1	Voltage above 7.5v
	Fuses	1	
	Capacity	1	Holding charge
	Battery Saver	1	Turn off automatically after 1 hour if not used
Charger	Power supply	1	Full of automations and the first used
Connections	Condition	1	
Cable	Condition	1	Clean no tears
Display	Operation	1	Olean, no tears
Firmware	Version	1	
Keypad	Operational	1	
Display	Screen	1	
Unit	Condition, seals and O-rings	1	
Monitor housing	Condition	1	
pH		and the second	
Condition		17	Good aloon
Asymmetry range bet	ween -1.00 to +1.00 pH	1	Good, clean
Slope range between	85.0 to 105.0 %	1	1
Calibrated and sector		1	
OBP (Factory calibrat	ms to manufacturer's specifications	-	
Condition	led, no user-calibration facility)	1.7	load day
Ouisk response time	and reading asympthy	1	Good, clean
w/ reading / 50m/	and reading correctly	1	lun A
Conductivity	from value as a function of temperature		
Condition		17	
Temperature		1	Good, clean
K factor range is ±/- 2	5% of nominal	1	k=9.26
Calibrated and confor	ms to manufacturer's specifications	1	us/cm, k=10 sensor
Dissolved Oxygen			Thereast we to got got
Condition		1	Good, clean
DO sensor in use		1	Galvanic
Air/span calibration st	ban range over 85%	1	

Calibrated and conforms to manufacturer's specifications V

This is to certify that the above instrument has been calibrated to the following specifications:

Parameter	Standards	Reference	Calibration points	Instrument Reading
Temperature	Thermometer		Temperature (°C)	20.6 °C
рН	pH 4.00	12/2102	pH 4.00	pH 4.00
pН	pH 7.00	12/2102	pH 7.00	pH 7.00
Conductivity	2760 µs/cm at 25 ℃	12/2002	2760 µs/cm	2760 µs/cm
ORP (Reference check only)	Zobell A and Zobell B	12/2202	232mV at 25℃	232mV
Zero Dissolved Oxygen	Sodium Sulphite Zero standard	(10) 254102	Dissolved Oxygen 0.0ppm	0.0 ppm
100% Dissolved Oxygen	100% air saturation	Air	Dissolved Oxygen 100%	100%

ppm

Calibration Date:

Next due:

Calibrated by:

Gaurav Kanwar

Melbourne-Head Office: Unit 3 266 Bolton Street ELTHAM VIC 3095 Sydney - Office : S14 Lvl 2 6-8 Holden Street ASHFIELD NSW 2131 Perth - Office: Unit 7 64 Bannister Road

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08-June-2012

08-July-2012

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www.aesolutions.com.au ABN 77 102 010 140



ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092	- 8000		
Date:	12/6/12			
Field Person:	CS/SV			
Instrument Su	pplier and Instrur	nent ID : <u>AES</u>	- V6457	Multimeter.

Mandatory checks before you leave for the field <u>and</u> when you get back to the office (only for those instruments used and parameters measured):

Parameter	Standard Solution	Acceptable Range	Out	In
(and potential units)	1		Reading	Reading
Electrical Conductivity	7,000 μS/cm KCl	6,300 - 7,700 μS/cm		
(µS/cm, mS/cm)		or 6.3 – 7.7 mS/cm	a in L	0.15 5
Temp: 16.6	12.88 mS/cm KCl	11.70 - 14.00 mS/cm	1-04mK	2.64mJ
TDS	7,000 µS/cm KCl	3,600 – 4,400 mg/L or ppM		
(mg/L, ppM, ppK)		or 3.6 – 4.4 ppK	1 march	
Dissolved Oxygen (DO)	Clean air	10 – 11 ppm or 19 – 25%		
(ppM Sal, %)				
Redox	240 mV for platinum	200 mV – 280 mV		
(mV)	and gold probes	and the second sec		
рН	pH 4.0 red <u>or</u>	рН 3.7 – 4.3	4.17	4.13
(no units)	pH 7.0 green	рН 6.7 – 7.3	7.01	705
PID	Clean air	0 – 0.5 ppm		
(ppm)	100 ppm	90 – 110 ppm		
			Out	In 3or X
			3or X	
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
			In field	
			1 to 5	
Whale pump strength	In field			·
Methane, oxygen and	Complete sheet specifi	c to gas meter		
carbon dioxide				1

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092-8000	
Date:	B16/2012	
Field Person:	CS SV KC	MIL
Instrument Su	pplier and Instrument ID : AES - V6457	Multimeter

Mandatory checks before you leave for the field and when you get back to the office (only for those instruments used and parameters measured):

Parameter	Standard Solution	Acceptable Range	Oùt	<u>In</u>
(and potential units)			Reading	Reading
Electrical Conductivity	7,000 µS/cm KCl	6,300 - 7,700 μS/cm		
(µS/cm, mS/cm)		or 6.3 – 7.7 mS/cm	265-5	265
Temp: 13	12.88 mS/cm KCl	11.70 – 14.00 mS/cm	2.0242	
TDS	7,000 µS/cm KCl	3,600 – 4,400 mg/L or ppM	1.	
(mg/L, ppM, ppK)		or 3.6 – 4.4 ppK	S	
Dissolved Oxygen (DO)	Clean air	10 – 11 ppm or 19 – 25%		
(ppM Sal, %)	(*)			
Redox	240 mV for platinum	200 mV – 280 mV		
(mV)	and gold probes			
рН	pH 4.0 red <u>or</u>	рН 3.7 – 4.3	4.0	4.11
(no units)	pH 7.0 green	рН 6.7 – 7.3	7.0	7.06
PID	Clean air	0 – 0.5 ppm		
(ppm)	100 ppm	90 – 110 ppm		
			Out	In 3or X
			3or X	
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
		i i materiale de la constante d	In field	
			1 to 5	
Whale pump strength	In field			
Methane, oxygen and	Complete sheet specifi	c to gas meter		
carbon dioxide	the second second second			1 constant

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092		
Date:	14/6/12		
Field Person:	KC SV	4.00	
Instrument Su	pplier and Instrument ID : _	90 FLMN	U6457

Mandatory checks before you leave for the field and when you get back to the office (only for those instruments used and parameters measured):

Parameter	Standard Solution	Acceptable Range	Out Reading	<u>In</u> Reading
(and potential units)	7.000 ··· 0/-··· 1/01	6 200 7 700 uS/om	THEAT	Accuration
Electrical Conductivity	$7,000 \mu\text{S/cm KCl}$	6,300 - 7,700 μS/cm	Allate	
$(\mu S/cm, mS/cm)$		or 6.3 – 7.7 mS/cm	\$ 2576.5	274
Temp:	12.88 mS/cm KCl	11.70 – 14.00 mS/cm	2 TOMA	art
TDS	7,000 µS/cm KCl	3,600 – 4,400 mg/L or ppM		
(mg/L, ppM, ppK)	A Second second	or 3.6 – 4.4 ppK	1	
Dissolved Oxygen (DO)	Clean air	10 – 11 ppm or 19 – 25%		
(ppM Sal, %)	A			
Redox	240 mV for platinum	200 mV – 280 mV		
(mV)	and gold probes			
рН	pH 4.0 red or	рН 3.7 – 4.3	3.98	4.22
(no units)	pH 7.0 green	рН 6.7 – 7.3	6.98	7.15
PID	Clean air	0 – 0.5 ppm		
(ppm)	100 ppm	90 – 110 ppm	1.000	
			Out	In 3or X
			3or X	
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
			In field	
			1 to 5	
Whale pump strength	In field			
Methane, oxygen and	Complete sheet specific	to gas meter		
carbon dioxide	· ·			

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092	
Date:	18/6/12	
Field Person:	(S KC	
Instrument Su	upplier and Instrument ID : <u>QO FLMV V6457</u>	-

Mandatory checks before you leave for the field <u>and</u> when you get back to the office (only for those instruments used and parameters measured): $\psi(45p^{-1})$

Parameter (and potential units)	Standard Solution	Acceptable Range	<u>Out</u> Reading	<u>In</u> Reading
Electrical Conductivity (µS/cm, mS/cm) Temp:	7,000 μS/cm KCl 12.88 mS/cm KCl	6,300 - 7,700 μS/cm or 6.3 - 7.7 mS/cm 11.70 - 14.00 mS/cm	2.74 .5	2.70~5
TDS (mg/L, ppM, ppK)	7,000 µS/cm KCl	3,600 – 4,400 mg/L or ppM or 3.6 – 4.4 ppK		
Dissolved Oxygen (DO) (ppM Sal, %)	Clean air	10 – 11 ppm or 19 – 25%		16.11
Redox (mV)	240 mV for platinum and gold probes	200 mV – 280 mV		1 22
pH (no units)	pH 4.0 red <u>or</u> pH 7.0 green	рН 3.7 – 4.3 рН 6.7 – 7.3	7.01	7.20
PDD (nnm)	Clean air	0 – 0.5 ppm 90 – 110 ppm		
(ppm)			Out 3or X	In 3or X
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep	In field 1 to 5	
Whale pump strength	In field			
Methane, oxygen and carbon dioxide	Complete sheet specifi	c to gas meter		

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092	4 8 000	
Date:	20/6/12		
Field Person:	KC /SV	-	
Instrument Su	pplier and Instrument ID :	90 FIMN	V6457

Mandatory checks before you leave for the field and when you get back to the office (only for those instruments used and parameters measured): 3000 - 215

Parameter (and potential units)	Standard Solution	Acceptable Range	<u>Out</u> Reading	<u>In</u> Reading
Electrical Conductivity (µS/cm, mS/cm) Temp:C	7,000 μS/cm KCl 12.88 mS/cm KCl	6,300 7,700 μS/cm or 6.3 - 7.7 mS/cm 11.70 - 14.00 mS/cm	2.75mS	2.71ms
TDS (mg/L, ppM, ppK)	7,000 μS/cm KCl	3,600 – 4,400 mg/L or pp™ or 3.6 – 4.4 ppK		(the second
Dissolved Oxygen (DO) (ppM Sal, %)	Clean air	10 – 11 ppm or 19 – 25%	11.371ри	. d.ochi
Redox (mV)	240 mV for platinum and gold probes	200 mV – 280 mV		
pH (no units)	pH 4.0 red or pH 7.0 green	рН 3.7 – 4.3 рнч 9	3.97	7.03
PID	Clean air	0 – 0.5 ppm		
(ppm)	100 ppm	90 – 110 ppm		
			Out 3or X	In 3or X
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
	1		In field 1 to 5	
Whale pump strength	In field		Al Longer	
Methane, oxygen and carbon dioxide	Complete sheet specifi	c to gas melor		

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	111643092	
Date:	19/6/12	
Field Person:	KC/ SV	NULS
Instrument Sup	oplier and Instrument ID : <u>GOFLAN</u>	V645

Mandatory checks before you leave for the field <u>and</u> when you get back to the office (only for those instruments used and parameters measured): $\frac{62000}{543}$

Parameter	Standard Solution	Acceptable Range	<u>Oût</u> Reading	<u>In</u> Reading
Electrical Conductivity (μS/cm, mS/cm)	7,000 μS/cm KCl	6,300 – 7,700 μS/cm or 6.3 – 7.7 mS/cm 11.70 – 14.00 mS/cm	2.70	2.70
Temp: TDS (mg/L, ppM, ppK)	7,000 µS/cm KCl	3,600 - 4,400 mg/L or ppM or 3.6 - 4.4 ppK		
Dissolved Oxygen (DO) (ppM Sal, %)	Clean air	10 - 11 ppm of 19 - 25%		
Redox (mV)	and gold probes	pH 3.7 - 4.3	3.99.	4.19
pH (no units)	pH 7.0 green	pH 6.7 - 7.3	700	7012
PID (ppm)	Clean air 100 ppm	90 – 110 ppm		In Jor V
			3or X	
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep	In field 1 to 5	
Whale pump strength	In field			1
Methane, oxygen and carbon dioxide	Complete sheet specifi	c to gas meter		

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092	
Date:	20/6/12	
Field Person:	KC / SV	18011
Instrument Sup	plier and Instrument ID : 90 FLINN	V48,66

Mandatory checks before you leave for the field and when you get back to the office (only for those instruments used and parameters measured): 2.2°

Parameter (and potential units)	Standard Solution	Acceptable Range	<u>Out</u> Reading	<u>In</u> Reading
Electrical Conductivity (µS/cm, mS/cm) Temp:	7,000 μS/cm KCl 12.88 mS/cm KCl	6,300 7,700 μS/cm or 6.3 7.7 mS/cm 11.70 14.00 mS/cm	2.78n5	2:76
TDS (mg/L, ppM, ppK)	7,000 µS/cm KCl	3,600 – 4,400 mg/L or ppM or 3.6 – 4.4 ppK		
Dissolved Oxygen (DO) (ppM Sal, %)	Clean air	10 – 11 ppm or 19 – 25%	q.10	1.93
Redox (mV)	240 mV for platinum and gold probes	200 mV – 280 mV		
pH (no units)	pH 4.0 red <u>or</u> pH 7.0 green	pH 3.7 – 4.3 pH 6.7 – 7.3	4.01	4.17 7.11
PID (ppm)	Clean air 100 ppm	0 – 0.5 ppm 90 – 110 ppm		
([]			<u>Out</u> 3or X	<u>In</u> 3or X
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
			<u>In field</u> 1 to 5	
Whale pump strength	In field			
Methane, oxygen and carbon dioxide	Complete sheet specifi	c to gas meter		

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092		
Date:	216/12		
Field Person:	KC, SV		In d.C.
Instrument Sup	plier and Instrument ID : _	40 FI MV	1486

Mandatory checks before you leave for the field and when you get back to the office (only for those instruments used and parameters measured):

Parameter (and potential units)	Standard Solution	Acceptable Range	<u>Out</u> Reading	<u>In</u> Reading
Electrical Conductivity $(\mu S/cm, m S/cm)$ Temp: $G \cdot \mathfrak{S}^{\circ} \subset \int \mathcal{H} \cdot \mathcal{S}^{\circ} c$	7,000 μS/cm KCl 12.88 mS/cm KCl	6,300 – 7,700 μS/cm or 6.3 – 7.7 mS/cm 11.70 – 14.00 mS/cm	2.77.5	2.71
TDS (mg/L, ppM, ppK)	7,000 μS/cm KCl	3,600 – 4,400 mg/L or ppM or 3.6 – 4.4 ppK		
Dissolved Oxygen (DO) (ppM Sal, %)	Clean air	10 – 11 ppm or 19 – 25%	1.2 . 948M	9.97
Redox (mV)	240 mV for platinum and gold probes	200 mV – 280 mV		
pH (no units)	pH 4.0 red <u>or</u> pH 7.0 green	pH 3.7 – 4.3 pH 6.7 – 7.3	3.96	725
PID	Clean air	0 – 0.5 ppm		
(ppm)	100 ppm	90 – 110 ppm		
			Out 3or X	In 3or X
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
			<u>In field</u> 1 to 5	
Whale pump strength	In field			
Methane, oxygen and carbon dioxide	Complete sheet specific	c to gas meter		

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ENVIRONMENTAL FIELD EQUIPMENT CHECK (Prior and After Use)

Job Number:	117643092		
Date:	4/7/12		
Field Person:	SV		
Instrument Su	pplier and Instrument ID : <u>AES</u>	V4866	

Mandatory checks before you leave for the field and when you get back to the office (only

for those instruments used and parameters measured):

Parameter	Standard Solution	Acceptable Range	<u>Out</u> Deading	In Reading
(and potential units)			Reading	Keaunig
Electrical Conductivity	7,000 µS/cm KCl	6,300 - 7,700 μS/cm		
(µS/cm, mS/cm)		or 6.3 – 7.7 mS/cm 2.76	212	2.10.
Temp:	12.88 mS/cm KCl	11.70 – 14.00 mS/cm		
TDS	7,000 µS/cm KCl	3,600 – 4,400 mg/L or ppM		
(mg/L, ppM, ppK)		or 3.6 – 4.4 ppK		
Dissolved Oxygen (DO)	Clean air	10 – 11 ppm or 19 – 25%		
(ppM Sal, %)	15			
Redox	240 mV for platinum	200 mV – 280 mV		
(mV)	and gold probes			
рН	pH 4.0 red or	рН 3.7 – 4.3	4.03	E-04
(no units)	pH 7.0 green	рН 6.7 – 7.3	6.94	6 74
PID	Clean air	0 – 0.5 ppm		
(ppm)	100 ppm	90 – 110 ppm		
		Out	In 3or X	
			3or X	
Interface probe	Diesel/water in glass jar	Intermittent/continuous beep		
		In field		
			1 to 5	
Whale pump strength	In field			
Methane, oxygen and carbon dioxide	Complete sheet specifi	c to gas meter		

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APPENDIX D

Limitations





LIMITATIONS

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