

Environmental Assessment Works

South Australian Environment Protection Authority

37 - 41 Cliff Street, Glenelg East

Appendix F: NATA Laboratory Certificates – Groundwater

Sample Receipt Advice

Company name: **AEC Environmental**
Contact name: Simon Welsh
Client job number: GROUNDWATER SAMPLING SA EPA
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Jul 11, 2014 11:25 AM
Eurofins | mgt reference: **424953**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Organic samples had Teflon liners.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Sarah Gould on Phone : (+61) (8) 8154 3100 or by e.mail: SarahGould@eurofins.com.au

Results will be delivered electronically via e.mail to Simon Welsh - simon.welsh@aeacust.com.au.

Eurofins | mgt Sample Receipt

AEC Environmental
12 Greenhill Road
Wayville
SA 5034



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Simon Welsh**

Report **424953-W**
Client Reference **GROUNDWATER SAMPLING J125792**
Received Date **Jul 11, 2014**

Client Sample ID			GW1	GW2	GW3	GW4
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M14-JI11350	M14-JI11351	M14-JI11352	M14-JI11353
Date Sampled			Jul 09, 2014	Jul 09, 2014	Jul 10, 2014	Jul 09, 2014
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	0.09	< 0.02	< 0.02	0.65
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	0.3	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	0.3	< 0.1	< 0.1
Volatile Organics						
Vinyl chloride (SIM)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	R16 < 0.001
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	113	118	113	104
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	0.09	< 0.02	< 0.02	0.65
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	0.09	< 0.02	< 0.02	0.65
TRH >C10-C16	0.05	mg/L	< 0.05	0.09	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	0.09	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	0.3	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Dissolved Gases						
Methane*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Halogenated Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GW1 Water M14-JI11350 Jul 09, 2014	GW2 Water M14-JI11351 Jul 09, 2014	GW3 Water M14-JI11352 Jul 10, 2014	GW4 Water M14-JI11353 Jul 09, 2014
Halogenated Volatile Organics						
1,2,3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1,2-Dichloroethene	0.001	mg/L	< 0.001	0.002	< 0.001	0.084
cis-1,3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	0.061	0.002	0.003	0.41
trans-1,2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
trans-1,3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	0.004	0.001	0.055
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	124	131	125	104
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Chloride						
Chloride	1	mg/L	1000	870	1200	1100
Ferric Iron - Fe3+						
Ferric Iron - Fe3+	0.05	mg/L	< 0.05	0.31	< 0.05	< 0.05
Ferrous Iron - Fe2+						
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	0.39	< 0.05	< 0.05
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	6.8	3.3	6.4	4.9
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	< 0.02	0.07	< 0.02	< 0.02
Sulphate (as S)						
Sulphate (as S)	5	mg/L	63	63	61	64
Sulphite (as S)						
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Alkalinity						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	460	510	460	470
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium						
Calcium	0.5	mg/L	210	190	210	230
Magnesium						
Magnesium	0.5	mg/L	120	110	120	170
Potassium						
Potassium	0.5	mg/L	7.2	5.7	7.3	6.9
Sodium						
Sodium	0.5	mg/L	400	380	510	390
Heavy Metals						
Iron (filtered)						
Iron (filtered)	0.05	mg/L	< 0.05	0.70	< 0.05	< 0.05
Manganese (filtered)						
Manganese (filtered)	0.005	mg/L	< 0.005	1.8	< 0.005	0.15

Client Sample ID			GW5 Water	GW6 Water	GW7 Water	GW8 Water
Sample Matrix			M14-JI11354	M14-JI11355	M14-JI11356	M14-JI11357
Eurofins | mgt Sample No.			Jul 09, 2014	Jul 09, 2014	Jul 09, 2014	Jul 09, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	0.05	3.5	< 0.02	1.0
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Volatile Organics						
Vinyl chloride (SIM)	0.00005	mg/L	< 0.00005	^{R16} < 0.001	< 0.00005	^{R16} < 0.001
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	106	96	113	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	0.05	3.5	< 0.02	1.0
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	0.05	3.5	< 0.02	1.0
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Dissolved Gases						
Methane*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Halogenated Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	0.002	< 0.001	0.48
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			GW5 Water	GW6 Water	GW7 Water	GW8 Water
Sample Matrix			M14-JI11354	M14-JI11355	M14-JI11356	M14-JI11357
Eurofins | mgt Sample No.			Jul 09, 2014	Jul 09, 2014	Jul 09, 2014	Jul 09, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Halogenated Volatile Organics						
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	0.029	2.8	0.007	0.26
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.012
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	0.008	< 0.001	0.20
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	129	96	128	102
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	< 0.01	< 0.01
Chloride	1	mg/L	970	1000	960	1000
Ferric Iron - Fe3+	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	6.4	6.0	6.2	4.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Sulphate (as S)	5	mg/L	66	62	62	61
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Alkalinity						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	460	450	420	480
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium	0.5	mg/L	210	210	200	210
Magnesium	0.5	mg/L	120	120	110	170
Potassium	0.5	mg/L	7.3	7.5	7.0	8.1
Sodium	0.5	mg/L	400	390	390	400
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			GW9 Water	GW10 Water	GW11 Water	GW12 Water
Sample Matrix			M14-JI11358	M14-JI11359	M14-JI11360	M14-JI11361
Eurofins | mgt Sample No.			Jul 10, 2014	Jul 09, 2014	Jul 10, 2014	Jul 10, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	0.62	< 0.02	1.1	1.4
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Volatile Organics						
Vinyl chloride (SIM)	0.00005	mg/L	^{R16} < 0.001	0.00010	^{R16} < 0.001	^{R16} < 0.001

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GW9 Water M14-JI11358 Jul 10, 2014	GW10 Water M14-JI11359 Jul 09, 2014	GW11 Water M14-JI11360 Jul 10, 2014	GW12 Water M14-JI11361 Jul 10, 2014
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	101	93	101	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	0.62	< 0.02	1.1	1.4
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	0.62	< 0.02	1.1	1.4
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Dissolved Gases						
Methane*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Halogenated Volatile Organics						
1,1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,1,1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,1,1,2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2,2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,2,3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1,4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1,2-Dichloroethene	0.001	mg/L	0.14	0.007	< 0.001	0.002
cis-1,3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	0.32	0.003	0.87	1.1
trans-1,2-Dichloroethene	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
trans-1,3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	0.042	0.002	0.003	0.005

Client Sample ID			GW9 Water	GW10 Water	GW11 Water	GW12 Water
Sample Matrix			M14-JI11358	M14-JI11359	M14-JI11360	M14-JI11361
Eurofins | mgt Sample No.			Jul 10, 2014	Jul 09, 2014	Jul 10, 2014	Jul 10, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Halogenated Volatile Organics						
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	102	104	100	102
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Chloride	1	mg/L	1100	1100	1000	1100
Ferric Iron - Fe3+	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	4.4	3.4	5.9	5.7
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Sulphate (as S)	5	mg/L	62	75	66	63
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Alkalinity						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	460	500	460	460
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium	0.5	mg/L	220	220	220	220
Magnesium	0.5	mg/L	120	120	120	120
Potassium	0.5	mg/L	7.5	7.0	7.8	7.6
Sodium	0.5	mg/L	440	470	390	450
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (filtered)	0.005	mg/L	0.038	0.57	< 0.005	< 0.005

Client Sample ID			GW13 Water	GW14 Water	GW15 Water	DC1 Water
Sample Matrix			M14-JI11362	M14-JI11363	M14-JI11364	M14-JI11365
Eurofins | mgt Sample No.			Jul 10, 2014	Jul 10, 2014	Jul 10, 2014	Jul 09, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	1.7	< 0.02	0.39	0.35
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Volatile Organics						
Vinyl chloride (SIM)	0.00005	mg/L	R16< 0.001	< 0.00005	R16< 0.001	R16< 0.001
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	98	89	99	102

Client Sample ID			GW13 Water	GW14 Water	GW15 Water	DC1 Water
Sample Matrix			M14-JI11362	M14-JI11363	M14-JI11364	M14-JI11365
Eurofins | mgt Sample No.			Jul 10, 2014	Jul 10, 2014	Jul 10, 2014	Jul 09, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	1.7	< 0.02	0.39	0.35
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	1.7	< 0.02	0.38	0.35
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Dissolved Gases						
Methane*	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.12
Halogenated Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.005	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	1.1	< 0.001	0.25	0.092
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.005	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	0.16	0.013	0.063	0.20
trans-1.2-Dichloroethene	0.001	mg/L	0.023	< 0.001	0.007	0.004
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	0.42	< 0.001	0.083	0.010
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	97	88	98	100
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	0.76
Chloride	1	mg/L	1000	1000	1100	1000
Ferric Iron - Fe3+	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.1
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.1

Client Sample ID			GW13 Water	GW14 Water	GW15 Water	DC1 Water
Sample Matrix			M14-JI11362	M14-JI11363	M14-JI11364	M14-JI11365
Eurofins | mgt Sample No.			Jul 10, 2014	Jul 10, 2014	Jul 10, 2014	Jul 09, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Nitrate (as N)	0.02	mg/L	3.1	6.2	5.6	3.3
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Sulphate (as S)	5	mg/L	58	65	63	49
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	500	450	450	470
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium	0.5	mg/L	200	220	210	240
Magnesium	0.5	mg/L	110	120	120	120
Potassium	0.5	mg/L	7.0	7.8	7.7	6.7
Sodium	0.5	mg/L	440	410	450	370
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.2
Manganese (filtered)	0.005	mg/L	0.068	< 0.005	< 0.005	0.28

Client Sample ID			QW1 Water	FB1 Water	TB1 Water	RB1 Water
Sample Matrix			M14-JI11366	M14-JI11367	M14-JI11368	M14-JI11369
Eurofins | mgt Sample No.			Jul 09, 2014	Jul 09, 2014	Jul 09, 2014	Jul 09, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	1.2	-	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	-	-
Volatile Organics						
Vinyl chloride (SIM)	0.00005	mg/L	^{R16} < 0.001	< 0.00005	< 0.00005	< 0.00005
BTEX						
Benzene	0.001	mg/L	< 0.001	-	-	-
Toluene	0.001	mg/L	< 0.001	-	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-	-
Xylenes - Total	0.003	mg/L	< 0.003	-	-	-
4-Bromofluorobenzene (surr.)	1	%	91	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	-	-	-
TRH C6-C10	0.02	mg/L	1.2	-	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	1.2	-	-	-
TRH >C10-C16	0.05	mg/L	< 0.05	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	-	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-	-
Dissolved Gases						
Methane*	0.05	mg/L	< 0.05	-	-	-

Client Sample ID			QW1	FB1	TB1	RB1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M14-JI11366	M14-JI11367	M14-JI11368	M14-JI11369
Date Sampled			Jul 09, 2014	Jul 09, 2014	Jul 09, 2014	Jul 09, 2014
Test/Reference	LOR	Unit				
Halogenated Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	0.94	< 0.001	< 0.001	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	92	127	130	89
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	< 0.01	-	-	-
Chloride	1	mg/L	1000	-	-	-
Ferric Iron - Fe3+	0.05	mg/L	< 0.05	-	-	-
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	-	-	-
Nitrate (as N)	0.02	mg/L	5.8	-	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-	-
Sulphate (as S)	5	mg/L	64	-	-	-
Sulphite (as S)	0.5	mg/L	< 1	-	-	-
Alkalinity						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	470	-	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	-	-	-

Client Sample ID			QW1	FB1	TB1	RB1
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			M14-JI11366	M14-JI11367	M14-JI11368	M14-JI11369
Date Sampled			Jul 09, 2014	Jul 09, 2014	Jul 09, 2014	Jul 09, 2014
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	220	-	-	-
Magnesium	0.5	mg/L	120	-	-	-
Potassium	0.5	mg/L	8.0	-	-	-
Sodium	0.5	mg/L	390	-	-	-
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	-	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	-	-	-

Client Sample ID			FB2	TB2
Sample Matrix			Water	Water
Eurofins | mgt Sample No.			M14-JI11370	M14-JI11371
Date Sampled			Jul 09, 2014	Jul 09, 2014
Test/Reference	LOR	Unit		
Volatile Organics				
Vinyl chloride (SIM)	0.00005	mg/L	< 0.00005	< 0.00005
Halogenated Volatile Organics				
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			FB2	TB2
Sample Matrix			Water	Water
Eurofins | mgt Sample No.			M14-JI11370	M14-JI11371
Date Sampled			Jul 09, 2014	Jul 09, 2014
Test/Reference	LOR	Unit		
Halogenated Volatile Organics				
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	127	102

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - MGT 100A	Melbourne	Jul 14, 2014	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LM-LTM-ORG2010	Melbourne	Jul 14, 2014	7 Day
Volatile Organics - Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS	Melbourne	Jul 11, 2014	7 Day
BTEX - Method: USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A	Melbourne	Jul 11, 2014	14 Day
Dissolved Gases - Method: Eurofins | mgt Method 136 Hydrocarbons by headspace	Melbourne	Jul 11, 2014	7 Day
Halogenated Volatile Organics - Method: USEPA 8260 MGT 350A Halogenated Volatile Organics	Melbourne	Jul 11, 2014	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Jul 14, 2014	2 Day
Sulphite (as S) - Method: APHA 4500 Sulphite	Melbourne	Jul 16, 2014	2 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Jul 11, 2014	180 Day
Eurofins | mgt Suite 11			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Jul 14, 2014	28 Day
Chloride - Method: MGT 1100A	Melbourne	Jul 14, 2014	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Jul 14, 2014	7 Day
Sulphate (as S) - Method: In house MGT1110A (SO4 by Discrete Analyser)	Melbourne	Jul 14, 2014	28 Day
Alkalinity - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 14, 2014	14 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 11, 2014	180 Day
Iron (speciated) (filtered Fe)			
Ferrous Iron - Fe ²⁺ - Method: APHA 3500-Fe B. (Iron Speciation)	Melbourne	Jul 14, 2014	28 Day

Melbourne
 3/5 Kingston Town Close
 Oakleigh VIC 3166
 Phone : +61 3 8564 5000
 NATA # 1261
 Site # 1254 & 14271

Sydney
 Unit 16, Building F
 16 Mac's Road West NSW 2066
 Lane Cove Phone : +61 2 9500 8400
 NATA # 1261 Site # 18217

Brisbane
 1/21 Springfield Place
 Murrumbidgee QLD 4172
 Phone : +61 7 3902 4600
 NATA # 1261 Site # 20794

Company Name: AEC Environmental
Address: 12 Greenhill Road
 Wayville
 SA 5034

Client Job No.: GROUNDWATER SAMPLING SA EPA

Order No.:
Report #: 424953
Phone: 08 8299 9955
Fax: 08 8299 9954

Received: Jul 11, 2014 11:25 AM
Due: Jul 18, 2014
Priority: 5 Day
Contact Name: Simon Welsh

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail

Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
External Laboratory					
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
GW1	Jul 09, 2014		Water	M14-J11350	X
GW2	Jul 09, 2014		Water	M14-J11351	X
GW3	Jul 10, 2014		Water	M14-J11352	X
GW4	Jul 09, 2014		Water	M14-J11353	X
GW5	Jul 09, 2014		Water	M14-J11354	X
GW6	Jul 09, 2014		Water	M14-J11355	X
GW7	Jul 09, 2014		Water	M14-J11356	X
GW8	Jul 09, 2014		Water	M14-J11357	X
GW9	Jul 10, 2014		Water	M14-J11358	X
GW10	Jul 09, 2014		Water	M14-J11359	X
					Halogenated Volatile Organics
					Eurofins | mgt Suite 11
					Total Recoverable Hydrocarbons
					Iron (speciated) (filtered Fe)
					BTEX
					Vinyl chloride (SIM)
					Sulphite (as S)
					Nitrite (as N)
					Methane*
					Manganese (filtered)

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Received: Jul 11, 2014 11:25 AM
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Contact Name: Simon Welsh

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Sample Detail		Halogenated Volatile Organics	Eurofins mgt Suite 11	Total Recoverable Hydrocarbons	Iron (speciated) (filtered Fe)	BTEX	Vinyl chloride (SIM)	Sulphite (as S)	Nitrite (as N)	Methane*	Manganese (filtered)
Laboratory where analysis is conducted											
Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217											
Brisbane Laboratory - NATA Site # 20794											
External Laboratory											
GW11	Jul 10, 2014	Water	M14-J11360	X	X	X	X	X	X	X	X
GW12	Jul 10, 2014	Water	M14-J11361	X	X	X	X	X	X	X	X
GW13	Jul 10, 2014	Water	M14-J11362	X	X	X	X	X	X	X	X
GW14	Jul 10, 2014	Water	M14-J11363	X	X	X	X	X	X	X	X
GW15	Jul 10, 2014	Water	M14-J11364	X	X	X	X	X	X	X	X
DC1	Jul 09, 2014	Water	M14-J11365	X	X	X	X	X	X	X	X
QW1	Jul 09, 2014	Water	M14-J11366	X	X	X	X	X	X	X	X
FB1	Jul 09, 2014	Water	M14-J11367				X				
TB1	Jul 09, 2014	Water	M14-J11368				X				
RB1	Jul 09, 2014	Water	M14-J11369				X				
FB2	Jul 09, 2014	Water	M14-J11370				X				

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ABN - 50 005 085 521 e.mail - EnviroSales@eurofins.com.au web - www.eurofins.com.au

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Laboratory where analysis is conducted	
Melbourne Laboratory - NATA Site # 1254 & 14271	X
Sydney Laboratory - NATA Site # 18217	X
Brisbane Laboratory - NATA Site # 20794	X
External Laboratory	
TB2	M14-J111371
	Water
Halogenated Volatile Organics	X
Eurofins | mgt Suite 11	X
Total Recoverable Hydrocarbons	X
Iron (speciated) (filtered Fe)	X
BTEX	X
Vinyl chloride (SIM)	X
Sulphite (as S)	X
Nitrite (as N)	X
Methane*	X
Manganese (filtered)	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/L	< 0.02		0.02	Pass	
TRH C10-C14	mg/L	< 0.05		0.05	Pass	
TRH C15-C28	mg/L	< 0.1		0.1	Pass	
TRH C29-C36	mg/L	< 0.1		0.1	Pass	
Method Blank						
Volatile Organics						
Vinyl chloride (SIM)	mg/L	< 0.00005		0.00005	Pass	
Method Blank						
BTEX						
Benzene	mg/L	< 0.001		0.001	Pass	
Toluene	mg/L	< 0.001		0.001	Pass	
Ethylbenzene	mg/L	< 0.001		0.001	Pass	
m&p-Xylenes	mg/L	< 0.002		0.002	Pass	
o-Xylene	mg/L	< 0.001		0.001	Pass	
Xylenes - Total	mg/L	< 0.003		0.003	Pass	
Method Blank						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/L	< 0.02		0.02	Pass	
TRH C6-C10	mg/L	< 0.02		0.02	Pass	
TRH C6-C10 less BTEX (F1)	mg/L	< 0.02		0.02	Pass	
TRH >C10-C16	mg/L	< 0.05		0.05	Pass	
TRH >C16-C34	mg/L	< 0.1		0.1	Pass	
TRH >C34-C40	mg/L	< 0.1		0.1	Pass	
Method Blank						
Dissolved Gases						
Methane*	mg/L	< 0.05		0.05	Pass	
Method Blank						
Halogenated Volatile Organics						
1.1-Dichloroethane	mg/L	< 0.001		0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001		0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001		0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001		0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001		0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001		0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001		0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001		0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001		0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001		0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001		0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001		0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001		0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001		0.001	Pass	
Bromodichloromethane	mg/L	< 0.001		0.001	Pass	
Bromoform	mg/L	< 0.001		0.001	Pass	
Bromomethane	mg/L	< 0.001		0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001		0.001	Pass	
Chlorobenzene	mg/L	< 0.001		0.001	Pass	
Chloroform	mg/L	< 0.005		0.005	Pass	
Chloromethane	mg/L	< 0.001		0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001		0.001	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
cis-1.3-Dichloropropene	mg/L	< 0.001		0.001	Pass	
Dibromochloromethane	mg/L	< 0.001		0.001	Pass	
Dibromomethane	mg/L	< 0.001		0.001	Pass	
Iodomethane	mg/L	< 0.001		0.001	Pass	
Methylene Chloride	mg/L	< 0.001		0.001	Pass	
Tetrachloroethene	mg/L	< 0.001		0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001		0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001		0.001	Pass	
Trichloroethene	mg/L	< 0.001		0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001		0.001	Pass	
Vinyl chloride	mg/L	< 0.001		0.001	Pass	
Method Blank						
Ammonia (as N)	mg/L	< 0.01		0.01	Pass	
Chloride	mg/L	< 1		1	Pass	
Ferrous Iron - Fe ²⁺	mg/L	< 0.05		0.05	Pass	
Nitrate (as N)	mg/L	< 0.02		0.02	Pass	
Nitrite (as N)	mg/L	< 0.02		0.02	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Sulphite (as S)	mg/L	< 0.5		0.5	Pass	
Method Blank						
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
Method Blank						
Heavy Metals						
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	104		70-130	Pass	
TRH C10-C14	%	110		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	90		70-130	Pass	
Toluene	%	99		70-130	Pass	
Ethylbenzene	%	101		70-130	Pass	
m&p-Xylenes	%	113		70-130	Pass	
Xylenes - Total	%	109		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH C6-C10	%	121		70-130	Pass	
TRH >C10-C16	%	110		70-130	Pass	
LCS - % Recovery						
Dissolved Gases						
Methane*	%	111		70-130	Pass	
LCS - % Recovery						
Halogenated Volatile Organics						
1.1-Dichloroethene	%	101		70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
1.1.1-Trichloroethane	%	125	70-130	Pass			
1.2-Dichloroethane	%	101	70-130	Pass			
Trichloroethene	%	84	70-130	Pass			
LCS - % Recovery							
Ammonia (as N)	%	104	70-130	Pass			
Chloride	%	102	70-130	Pass			
Ferrous Iron - Fe2+	%	104	70-130	Pass			
Nitrate (as N)	%	110	70-130	Pass			
Nitrite (as N)	%	108	70-130	Pass			
Sulphate (as S)	%	105	70-130	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	112	70-130	Pass			
Magnesium	%	117	70-130	Pass			
Potassium	%	107	70-130	Pass			
Sodium	%	108	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Iron (filtered)	%	86	80-120	Pass			
Manganese (filtered)	%	96	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Ammonia (as N)	M14-JI10612	NCP	%	98	70-130	Pass	
Chloride	M14-JI11645	NCP	%	105	70-130	Pass	
Nitrate (as N)	M14-JI10612	NCP	%	111	70-130	Pass	
Nitrite (as N)	M14-JI10612	NCP	%	109	70-130	Pass	
Spike - % Recovery							
Alkali Metals							
				Result 1			
Calcium	M14-JI11350	CP	%	114	70-130	Pass	
Magnesium	M14-JI11350	CP	%	116	70-130	Pass	
Potassium	M14-JI12555	NCP	%	85	70-130	Pass	
Sodium	M14-JI11350	CP	%	111	70-130	Pass	
Spike - % Recovery							
Dissolved Gases							
				Result 1			
Methane*	M14-JI11355	CP	%	108	70-130	Pass	
Spike - % Recovery							
Heavy Metals							
				Result 1			
Iron (filtered)	M14-JI11355	CP	%	81	70-130	Pass	
Manganese (filtered)	M14-JI11355	CP	%	89	70-130	Pass	
Spike - % Recovery							
				Result 1			
Sulphate (as S)	M14-JI11360	CP	%	108	70-130	Pass	
Spike - % Recovery							
Alkali Metals							
				Result 1			
Calcium	M14-JI11360	CP	%	97	70-130	Pass	
Magnesium	M14-JI11360	CP	%	98	70-130	Pass	
Sodium	M14-JI11360	CP	%	93	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
				Result 1			
TRH C10-C14	M14-JI11361	CP	%	106	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
				Result 1			
TRH >C10-C16	M14-JI11361	CP	%	107	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Dissolved Gases				Result 1					
Methane*	M14-JI11363	CP	%	106			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Manganese (filtered)	M14-JI11365	CP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M14-JI11370	CP	%	113			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M14-JI11370	CP	%	103			70-130	Pass	
Toluene	M14-JI11370	CP	%	105			70-130	Pass	
Ethylbenzene	M14-JI11370	CP	%	110			70-130	Pass	
m&p-Xylenes	M14-JI11370	CP	%	103			70-130	Pass	
o-Xylene	M14-JI11370	CP	%	102			70-130	Pass	
Xylenes - Total	M14-JI11370	CP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M14-JI11370	CP	%	78			70-130	Pass	
Spike - % Recovery									
Halogenated Volatile Organics				Result 1					
1.1-Dichloroethene	M14-JI11370	CP	%	80			70-130	Pass	
1.1.1-Trichloroethane	M14-JI11370	CP	%	123			70-130	Pass	
1.2-Dichlorobenzene	M14-JI11370	CP	%	94			70-130	Pass	
1.2-Dichloroethane	M14-JI11370	CP	%	94			70-130	Pass	
Trichloroethene	M14-JI11370	CP	%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M14-JI12213	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M14-JI12213	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M14-JI12213	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M14-JI12213	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	M14-JI12213	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	M14-JI12213	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Halogenated Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1-Dichloroethene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1-Trichloroethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2-Trichloroethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dibromoethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichlorobenzene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Halogenated Volatile Organics				Result 1	Result 2	RPD		
1.2-Dichloroethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.2-Dichloropropane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.2.3-Trichloropropane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.3-Dichlorobenzene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.3-Dichloropropane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1.4-Dichlorobenzene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromodichloromethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromoform	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromomethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Carbon Tetrachloride	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chlorobenzene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chloroform	M14-JI12213	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Chloromethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1.2-Dichloroethene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1.3-Dichloropropene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromochloromethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromomethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iodomethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Methylene Chloride	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Tetrachloroethene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
trans-1.2-Dichloroethene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
trans-1.3-Dichloropropene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichloroethene	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichlorofluoromethane	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Vinyl chloride	M14-JI12213	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M14-JI10612	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate (as N)	M14-JI10612	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M14-JI10612	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Sulphite (as S)	M14-JI11350	CP	mg/L	< 1	< 1	<1	30%	Pass
Duplicate								
Alkalinity				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M14-JI11350	CP	mg/L	460	460	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M14-JI11350	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M14-JI11350	CP	mg/L	210	210	<1	30%	Pass
Magnesium	M14-JI11350	CP	mg/L	120	120	2.0	30%	Pass
Potassium	M14-JI11350	CP	mg/L	7.2	7.1	1.0	30%	Pass
Sodium	M14-JI11350	CP	mg/L	400	390	<1	30%	Pass
Duplicate								
Dissolved Gases				Result 1	Result 2	RPD		
Methane*	M14-JI11354	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	M14-JI11355	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Manganese (filtered)	M14-JI11355	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	M14-JI11360	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M14-JI11360	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M14-JI11360	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M14-JI11360	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M14-JI11360	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M14-JI11360	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M14-JI11360	CP	mg/L	1000	1100	1.8	30%	Pass
Ferrous Iron - Fe2+	M14-JI11360	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M14-JI11360	CP	mg/L	66	67	1.5	30%	Pass
Sulphite (as S)	M14-JI11360	CP	mg/L	< 1	< 1	<1	30%	Pass
Duplicate								
Alkalinity				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M14-JI11360	CP	mg/L	460	460	1.0	30%	Pass
Carbonate Alkalinity (as CaCO3)	M14-JI11360	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M14-JI11360	CP	mg/L	220	220	<1	30%	Pass
Magnesium	M14-JI11360	CP	mg/L	120	120	<1	30%	Pass
Potassium	M14-JI11360	CP	mg/L	7.8	7.7	1.0	30%	Pass
Sodium	M14-JI11360	CP	mg/L	390	390	<1	30%	Pass
Duplicate								
Dissolved Gases				Result 1	Result 2	RPD		
Methane*	M14-JI11362	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	M14-JI11365	CP	mg/L	1.2	1.2	2.1	30%	Pass
Manganese (filtered)	M14-JI11365	CP	mg/L	0.28	0.28	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ferrous Iron - Fe2+	M14-JI11366	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
R16	The LORs have been raised due to the high concentration of one or more analytes

Authorised By

Sarah Gould	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Stacey Jenkins	Senior Analyst-Organic (VIC)



Glenn Jackson

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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FREIGHT

AEC Environmental Pty Ltd
Sample Chain of Custody and Testing Request
Samples Submitted to ALS For Analysis

Job no : J125792
 Purchase Order : 48231
 Sheet no : 1 of 1
 sampled by : SW / JL
 date : 09-Jul-14

10/7/14

client : SA EPA
 project : Groundwater Sampling
 location : 37-41 Cliff Street, Glenelg East

sample number	location	depth below surface	sample containers								material	testing required										
			Metals Bottle (field filtered & preserved)	Ferrous Ferric Iron Bottle	Glass Amber (1L)	Glass vials (preserved)	Unpreserved Plastic bottle (1L)	Plastic (H2SO4 Preserved)	Plastic (NaOH Preserved)	Sulphate Bottle		Sulphite Bottle	Glass-Vials (acid-filled -methane)	Major Anions and Cations	TPH/BTEX	Methane	Nitrite, Nitrate and Ammonia	VHC - Low Level for VC only	Manganese	Ferrous and Ferric Iron	Sulphate	Sulphite
QW2			X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
<p>Sampling date on containers = 10/7/14 RT</p>																						

Environmental Division
 CM Melbourne CM
 11/7 11/7
 10/8 Work Order 10/8
EM1406830



Telephone : + 61-3-8549 9600

Notes :
 AEC Contact - Simon Welsh (08) 8299-9955
 Company Fax- 08 8299 9954
 Please email results to the following :- simon.welsh@aecaust.com.au andrew.durand@aecaust.com.au Jordan.Lyons@aecaust.com.au

Chain of Custody:			
Relinquished by -	Company	Date	Received by - Name & Comp. date time
SW	AEC	10/7/14	Rayna 11/7 8:30 AEC
Results required by:		date :	

Samples sent to lab for
 Micro Nitrate BOD pH
 Colour Turbidity RP
 Other... Sulphite.....
 Date... MB... 11/7.....

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EM1406830**

Client : **AEC ENVIRONMENTAL PTY LTD**
Contact : MR SIMON WELSH
Address : 12 Greenhill Road, Wayville, SA, 5034
PO Box 582
UNLEY SA, AUSTRALIA 5061

Laboratory : Environmental Division Melbourne
Contact : Steven McGrath
Address : 4 Westall Rd Springvale VIC Australia
3171

E-mail : simon.welsh@aecaust.com.au
Telephone : +61 08 8299 9955
Facsimile : +61 08 8362 9776

E-mail : steven.mcgrath@alsenviro.com
Telephone : +61-3-8549 9600
Facsimile : +61-3-8549 9601

Project : J125792 Groundwater Sampling
Order number : 48231
C-O-C number : ----
Site : 37-41 Cliff St, Glenelg East
Sampler : SW/JL

Page : 1 of 3
Quote number : EA2014ADEENV0182 (AD/003/14)
QC Level : NEPM 2013 Schedule B(3) and ALS
QCS3 requirement

Dates

Date Samples Received : 11-JUL-2014
Client Requested Due Date : 18-JUL-2014

Issue Date : 11-JUL-2014 14:35
Scheduled Reporting Date : **18-JUL-2014**

Delivery Details

Mode of Delivery : Carrier
No. of coolers/boxes : 1
Security Seal : N/A

Temperature : 4.8-5.3 - Ice bricks present
No. of samples received : 1
No. of samples analysed : 1

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.**
- **Sample(s) received in non-ALS container(s).**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.**
- **Analytical work for this work order will be conducted at ALS Springvale and ALS Sydney.**
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 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 - EG020F Dissolved Metals by ICPMS	WATER - EG051G Ferrous Iron by Discrete Analyser	WATER - EG053FG-MS Dissolved Ferric Iron by ICPMS/DA	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK086 Sulfite as SO3-	WATER - EP033 - Methane Methane in Water	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - EP125E Halogenated Aliphatics - Ultra trace
EM1406830-001	10-JUL-2014 15:00	QW2	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - NT-01 & 02 Major Cations & Anions (Ca, Mg, Na, K, Cl, SO4,	WATER - NT-04 Nitrite and Nitrate	WATER - W-04 TRH/BTEXN
EM1406830-001	10-JUL-2014 15:00	QW2	✓	✓	✓

Proactive Holding Time Report

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

CERTIFICATE OF ANALYSIS

Work Order	: EM1406830	Page	: 1 of 7
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MIR SIMON WELSH	Contact	: Steven McGrath
Address	: 12 Greenhill Road, Wayville, SA, 5034 PO Box 582 UNLEY SA, AUSTRALIA 5061	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: simon.welsh@aecaust.com.au	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 08 8299 9955	Telephone	: +61-3-8549 9600
Facsimile	: +61 08 8362 9776	Facsimile	: +61-3-8549 9601
Project	: J125792 Groundwater Sampling	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 48231	Date Samples Received	: 11-JUL-2014
C-O-C number	: ----	Issue Date	: 17-JUL-2014
Sampler	: SW/JL	No. of samples received	: 1
Site	: 37-41 Cliff St, Glenelg East	No. of samples analysed	: 1
Quote number	: AD/003/14		

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



Page : 2 of 7
 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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.

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting

- **EP080: ALS acknowledges a discrepancy between the sum of VOC analytes that fall within the C6-C9/C6-C10 TPH band and the reported C6-C9/C6-C10 TPH concentration for sample EM1406830-001. The variation is due to how the TPH band is quantified versus individual compound quantification. For individual compound quantification, a response factor based directly on the compound of interest is used. For TPH, a single response factor is employed to represent all possible compounds that fall within the C6-C9/C6-C10 band. This can give rise to the variation observed for this samples**
- **EP080: Poor matrix spike recovery for sample EM1406830-001 due to the presence of high level contaminants.**
- **Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.**
- **Methane (EP033) conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.**



WORLD RECOGNISED
ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with
 ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Christopher Lemaitre	Non-Metals Team Leader	Melbourne Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Metals Team Leader	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Client sample ID	
Compound	CAS Number	Client sampling date / time	QW2
	LOR	Unit	
ED037P: Alkalinity by PC Titrator			
Hydroxide Alkalinity as CaCO3	DMO-210-001	1 mg/L	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1 mg/L	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1 mg/L	483
Total Alkalinity as CaCO3		1 mg/L	483
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA			
Sulfate as SO4 - Turbidimetric	14808-79-8	1 mg/L	188
ED045G: Chloride Discrete analyser			
Chloride	16887-00-6	1 mg/L	1050
ED093F: Dissolved Major Cations			
Calcium	7440-70-2	1 mg/L	217
Magnesium	7439-95-4	1 mg/L	156
Sodium	7440-23-5	1 mg/L	395
Potassium	7440-09-7	1 mg/L	8
EG020F: Dissolved Metals by ICP-MS			
Manganese	7439-96-5	0.001 mg/L	0.001
EG051G: Ferrous Iron by Discrete Analyser			
Ferrous Iron		0.05 mg/L	<0.05
EG053FG-MS: Dissolved Ferric Iron by ICPMS and DA			
Ferric Iron		0.05 mg/L	<0.05
EK055G: Ammonia as N by Discrete Analyser			
Ammonia as N	7664-41-7	0.01 mg/L	0.01
EK057G: Nitrite as N by Discrete Analyser			
Nitrite as N		0.01 mg/L	<0.01
EK058G: Nitrate as N by Discrete Analyser			
Nitrate as N	14797-55-8	0.01 mg/L	4.63
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser			
Nitrite + Nitrate as N		0.01 mg/L	4.63
EK086: Sulfite as SO3 2-			
Sulfite as SO3 2-	14265-45-3	2 mg/L	<2
EN055: Ionic Balance			
Total Anions		0.01 meq/L	43.2
Total Cations		0.01 meq/L	41.0
Ionic Balance		0.01 %	2.52



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Client sample ID	
Compound	CAS Number	Client sampling date / time	QW2
	LOR	Unit	
EP033: C1 - C4 Hydrocarbon Gases			
Methane	74-82-8	10 µg/L	<10
EP074D: Fumigants			
2,2-Dichloropropane	594-20-7	5 µg/L	<5
1,2-Dichloropropane	78-87-5	5 µg/L	<5
cis-1,3-Dichloropropylene	10061-01-5	5 µg/L	<5
trans-1,3-Dichloropropylene	10061-02-6	5 µg/L	<5
1,2-Dibromoethane (EDB)	106-93-4	5 µg/L	<5
EP074E: Halogenated Aliphatic Compounds			
Dichlorodifluoromethane	75-71-8	50 µg/L	<50
Chloromethane	74-87-3	50 µg/L	<50
Bromomethane	74-83-9	50 µg/L	<50
Chloroethane	75-00-3	50 µg/L	<50
Trichlorofluoromethane	75-69-4	50 µg/L	<50
1,1-Dichloroethene	75-35-4	5 µg/L	<5
Iodomethane	74-88-4	5 µg/L	<5
trans-1,2-Dichloroethene	156-60-5	5 µg/L	<5
1,1-Dichloroethane	75-34-3	5 µg/L	<5
cis-1,2-Dichloroethene	156-59-2	5 µg/L	<5
1,1,1-Trichloroethane	71-55-6	5 µg/L	<5
1,1-Dichloropropylene	563-58-6	5 µg/L	<5
Carbon Tetrachloride	56-23-5	5 µg/L	<5
1,2-Dichloroethane	107-06-2	5 µg/L	<5
Trichloroethene	79-01-6	5 µg/L	6
Dibromomethane	74-95-3	5 µg/L	<5
1,1,2-Trichloroethane	79-00-5	5 µg/L	<5
1,3-Dichloropropane	142-28-9	5 µg/L	<5
Tetrachloroethene	127-18-4	5 µg/L	1370
1,1,1,2-Tetrachloroethane	630-20-6	5 µg/L	<5
trans-1,4-Dichloro-2-butene	110-57-6	5 µg/L	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5 µg/L	<5
1,1,2,2-Tetrachloroethane	79-34-5	5 µg/L	<5
1,2,3-Trichloropropane	96-18-4	5 µg/L	<5
Pentachloroethane	76-01-7	5 µg/L	<5
1,2-Dibromo-3-chloropropane	96-12-8	5 µg/L	<5



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Client sample ID		QW2	
Compound	CAS Number	LOR	Unit	Client sampling date / time	EM1406830-001
EP074E: Halogenated Aliphatic Compounds - Continued					
Hexachlorobutadiene	87-68-3	5	µg/L		<5
EP074F: Halogenated Aromatic Compounds					
Chlorobenzene	108-90-7	5	µg/L		<5
Bromobenzene	108-86-1	5	µg/L		<5
2-Chlorotoluene	95-49-8	5	µg/L		<5
4-Chlorotoluene	106-43-4	5	µg/L		<5
1,3-Dichlorobenzene	541-73-1	5	µg/L		<5
1,4-Dichlorobenzene	106-46-7	5	µg/L		<5
1,2-Dichlorobenzene	95-50-1	5	µg/L		<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L		<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L		<5
EP074G: Trihalomethanes					
Chloroform	67-66-3	5	µg/L		<5
Bromodichloromethane	75-27-4	5	µg/L		<5
Dibromochloromethane	124-48-1	5	µg/L		<5
Bromoform	75-25-2	5	µg/L		<5
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction		20	µg/L		1050
C10 - C14 Fraction		50	µg/L		<50
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 Hydrocarbons - NEPM 2013					
C6 - C10 Fraction	C6_C10	20	µg/L		1010
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		1010
>C10 - C16 Fraction	>C10_C16	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
^ >C10 - C16 Fraction minus Naphthalene (F2)		100	µg/L		<100
EP080: BTEXN					
Benzene	71-43-2	1	µg/L		<1



Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Client sample ID	
Compound	CAS Number	Client sampling date / time	QW2
	LOR	Unit	EM1406830-001
EP080: BTEXN - Continued			
Toluene	108-88-3	2 µg/L	<2
Ethylbenzene	100-41-4	2 µg/L	<2
meta- & para-Xylene	108-38-3	2 µg/L	<2
ortho-Xylene	95-47-6	2 µg/L	<2
Total Xylenes	1330-20-7	2 µg/L	<2
Sum of BTEX		1 µg/L	<1
Naphthalene	91-20-3	5 µg/L	<5
EP125E: Halogenated Aliphatic Compounds			
Vinyl chloride	75-01-4	0.3 µg/L	<0.3
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	0.1 %	93.7
Toluene-D8	2037-26-5	0.1 %	102
4-Bromofluorobenzene	460-00-4	0.1 %	101
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	0.1 %	97.6
Toluene-D8	2037-26-5	0.1 %	99.9
4-Bromofluorobenzene	460-00-4	0.1 %	104
EP125S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	0.1 %	99.5
Toluene-D8	2037-26-5	0.1 %	95.7
4-Bromofluorobenzene	460-00-4	0.1 %	97.7



Surrogate Control Limits

Sub-Matrix: GROUNDWATER			
Compound	CAS Number	Recovery Limits (%)	
		Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129
EP125S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	130
Toluene-D8	2037-26-5	68	128
4-Bromofluorobenzene	460-00-4	71	120

QUALITY CONTROL REPORT

Work Order : **EM1406830** Page : 1 of 10

Client : **AEC ENVIRONMENTAL PTY LTD** Laboratory : Environmental Division Melbourne
Contact : **MR SIMON WELSH** Contact : Steven McGrath
Address : 12 Greenhill Road, Wayville, SA, 5034 PO Box 582
UNLEY SA, AUSTRALIA 5061
E-mail : **simon.welsh@aecaust.com.au** E-mail : **steven.mcgrath@alsenviro.com**
Telephone : **+61 08 8299 9955** Telephone : **+61-3-8549 9600**
Facsimile : **+61 08 8362 9776** Facsimile : **+61-3-8549 9601**

Project : **J125792 Groundwater Sampling** QC Level : **NEPM 2013 Schedule B(3) and ALS QCS3 requirement**
Site : **37-41 Cliff St, Glenelg East**
C-O-C number : **----** Date Samples Received : **11-JUL-2014**
Sampler : **SW/JL** Issue Date : **17-JUL-2014**
Order number : **48231** No. of samples received : **1**
Quote number : **AD/003/14** No. of samples analysed : **1**

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



Page : 2 of 10
 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

General Comments

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

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

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

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

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



NATA Accredited
 Laboratory 825
 Accredited for
 compliance with
 ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Christopher Lemaitre	Non-Metals Team Leader	Melbourne Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Metals Team Leader	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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 sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 3537221)										
EM1406772-001	Anonymous		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
			ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
			ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	34	5.3	0% - 20%
			ED037-P: Total Alkalinity as CaCO3	---	1	mg/L	32	34	5.3	0% - 20%
EM1406840-005	Anonymous		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
			ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
			ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	34	3.1	0% - 20%
			ED037-P: Total Alkalinity as CaCO3	---	1	mg/L	32	34	3.1	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3539444)										
EM1406830-001	QW2		ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	188	188	0.0	0% - 20%
EM1406843-003	Anonymous		ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2760	2740	0.8	0% - 20%
ED045G: Chloride Discrete analyser (QC Lot: 3539443)										
EM1406830-001	QW2		ED045G: Chloride	16887-00-6	1	mg/L	1050	1060	1.0	0% - 20%
EM1406830-001	QW2		ED045G: Chloride	16887-00-6	1	mg/L	1050	1060	0.9	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 3539441)										
EM1406830-001	QW2		ED093F: Calcium	7440-70-2	1	mg/L	217	216	0.7	0% - 20%
			ED093F: Magnesium	7439-95-4	1	mg/L	156	156	0.0	0% - 20%
			ED093F: Sodium	7440-23-5	1	mg/L	395	394	0.3	0% - 20%
			ED093F: Potassium	7440-09-7	1	mg/L	8	8	0.0	No Limit
EM1406843-003	Anonymous		ED093F: Calcium	7440-70-2	1	mg/L	517	524	1.4	0% - 20%
			ED093F: Magnesium	7439-95-4	1	mg/L	127	129	1.2	0% - 20%
			ED093F: Sodium	7440-23-5	1	mg/L	354	358	1.2	0% - 20%
			ED093F: Potassium	7440-09-7	1	mg/L	309	314	1.6	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3541178)										
EM1406425-001	Anonymous		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.151	0.145	4.2	0% - 20%
EM1406835-003	Anonymous		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.010	0.010	0.0	No Limit
EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 3544229)										
EM1406830-001	QW2		EG051G: Ferrous Iron	---	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 3538613)										
EM1406830-001	QW2		EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	<0.01	0.0	No Limit
EM1406842-003	Anonymous		EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.08	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3539442)										
EM1406830-001	QW2		EK057G: Nitrite as N	---	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM1406843-003	Anonymous		EK057G: Nitrite as N	---	0.01	mg/L	0.10	0.10	0.0	No Limit



Sub-Matrix: WATER									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3538612)									
EM1406830-001	QW2	EK059G: Nitrite + Nitrate as N	---	0.01	mg/L	4.63	4.64	0.0	0% - 20%
EM1406842-003	Anonymous	EK059G: Nitrite + Nitrate as N	---	0.01	mg/L	0.30	0.29	0.0	0% - 20%
EK086: Sulfite as SO3 2- (QC Lot: 3541572)									
EM1406830-001	QW2	EK086: Sulfite as SO3 2-	14265-45-3	2	mg/L	<2	<2	0.0	No Limit
EP033: C1 - C4 Hydrocarbon Gases (QC Lot: 3543961)									
EM1406849-001	Anonymous	EP033: Methane	74-82-8	10	µg/L	51	48	6.4	No Limit
EB1416814-001	Anonymous	EP033: Methane	74-82-8	1000	µg/L	5460	5530	1.3	No Limit
EP074D: Fumigants (QC Lot: 3539205)									
EM1406829-001	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: Halogenated Aliphatic Compounds (QC Lot: 3539205)									
EM1406829-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	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: 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



Page : 5 of 10
 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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: Halogenated Aliphatic Compounds (QC Lot: 3539205) - continued											
EM1406829-001	Anonymous	EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
EP074F: Halogenated Aromatic Compounds (QC Lot: 3539205)											
EM1406829-001	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: Trihalomethanes (QC Lot: 3539205)											
EM1406829-001	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		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3539206)											
EM1406829-001	Anonymous	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.0	No Limit		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3539206)											
EM1406829-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit		
EP080: BTEXN (QC Lot: 3539206)											
EM1406829-001	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		
		EP080: ortho-Xylene	106-42-3	2	µg/L	<2	<2	0.0	No Limit		
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit		
EP125E: Halogenated Aliphatic Compounds (QC Lot: 3539297)											
EM1406828-001	Anonymous	EP125: Vinyl chloride	75-01-4	0.3	µg/L	22.7	22.6	0.8	0% - 20%		



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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

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

Sub-Matrix: **WATER**

Method/Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report		
				Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High
ED037P: Alkalinity by PC Titrator (QCLot: 3537221)								
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	----	200 mg/L	101	95	103
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3539444)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	97.4	90	116
ED045G: Chloride Discrete analyser (QCLot: 3539443)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.1	89	117
				----	1000 mg/L	95.2	92	112
ED093F: Dissolved Major Cations (QCLot: 3539441)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	5 mg/L	101	92	112
ED093F: Magnesium	7439-95-4	1	mg/L	<1	5 mg/L	97.9	90	112
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.6	88	112
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.6	87	111
EG020F: Dissolved Metals by ICP-MS (QCLot: 3541178)								
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	97.8	87	109
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 3544229)								
EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	2 mg/L	105	89	111
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3538613)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1.0 mg/L	98.5	80	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3539442)								
EK057G: Nitrite as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.2	92	108
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3538612)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91	117
EK086: Sulfite as SO3 2- (QCLot: 3541572)								
EK086: Sulfite as SO3 2-	14265-45-3	2	mg/L	<2	100 mg/L	98.5	93	101
EP033: C1 - C4 Hydrocarbon Gases (QCLot: 3543961)								
EP033: Methane	74-82-8	10	µg/L	<10	27.92 µg/L	103	86	114
EP074D: Fumigants (QCLot: 3539205)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	94.4	63	123
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	108	79	125
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	99.0	70	118
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	96.8	68	115
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	103	78	120
EP074E: Halogenated Aliphatic Compounds (QCLot: 3539205)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	200 µg/L	115	51	141



Sub-Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) Report		
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QCLot: 3539205) - continued							
EP074: Chloromethane	74-87-3	50	µg/L	<50	200 µg/L	119	57 141
EP074: Bromomethane	74-83-9	50	µg/L	<50	200 µg/L	114	57 132
EP074: Chloroethane	75-00-3	50	µg/L	<50	200 µg/L	106	64 132
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	200 µg/L	107	63 131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	106	63 127
EP074: Iodomethane	74-88-4	5	µg/L	<5	20 µg/L	79.6	37 127
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	110	69 124
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	20 µg/L	105	73 121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	108	78 120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	99.2	69 119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	20 µg/L	106	68 122
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	91.5	63 119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	108	78 120
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	112	74 120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	20 µg/L	107	76 118
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	109	81 121
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	20 µg/L	105	83 122
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	104	70 122
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	90.1	77 113
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	20 µg/L	97.5	65 121
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	20 µg/L	78.4	54 119
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	110	81 125
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	20 µg/L	106	81 125
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	20 µg/L	81.2	62 122
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	20 µg/L	83.4	64 120
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	97.9	60 122
EP074F: Halogenated Aromatic Compounds (QCLot: 3539205)							
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	104	80 118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	94.5	74 116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	99.9	76 114
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	97.8	73 113
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	20 µg/L	101	76 114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	104	76 116
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	104	81 113
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	101	64 118
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	104	72 120
EP074G: Trihalomethanes (QCLot: 3539205)							
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	107	78 118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	96.1	74 114



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Sub-Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	LCS	Low	High
EP074G: Trihalomethanes (QCLot: 3539205) - continued									
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	86.2	72	112	
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	83.5	65	115	
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3537178)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3980 µg/L	82.2	46	126	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	17006 µg/L	87.5	55	125	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8662 µg/L	92.0	55	129	
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3539206)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	94.5	67	127	
EP080/074: Total Recoverable Hydrocarbons - NIEPM 2013 (QCLot: 3537178)									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	5753 µg/L	83.8	53	129	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	24516 µg/L	87.2	56	132	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	828 µg/L	87.6	51	137	
EP080/074: Total Recoverable Hydrocarbons - NIEPM 2013 (QCLot: 3539206)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	92.4	65	125	
EP080: BTEXN (QCLot: 3539206)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	76	120	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	98.6	76	124	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	96.4	72	124	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.5	72	130	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	99.4	75	127	
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	93.9	71	129	
EP125E: Halogenated Aliphatic Compounds (QCLot: 3539297)									
EP125: Vinyl chloride	75-01-4	0.3	µg/L	<0.3	10 µg/L	106	81	129	

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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Matrix Spike (MS) Report		
					Spike Recovery(%)	Recovery Limits (%)	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3539444)							
EM1406838-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	98.1	70	130
ED045G: Chloride Discrete analyser (QCLot: 3539443)							
EM1406840-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	106	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 3541178)							



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3541178) - continued						
EM1406425-001	Anonymous	EG020A-F: Manganese	7439-96-5	0.2 mg/L	86.9	64 134
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 3544229)						
EM1406924-004	Anonymous	EG051G: Ferrous Iron	----	2 mg/L	97.2	70 128
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3538613)						
EM1406840-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.0 mg/L	105	70 130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3539442)						
EM1406838-001	Anonymous	EK057G: Nitrite as N	----	0.5 mg/L	78.7	77 119
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3538612)						
EM1406840-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	87.4	70 130
EP033: C1 - C4 Hydrocarbon Gases (QCLot: 3543961)						
EB1416813-001	Anonymous	EP033: Methane	74-82-8	27.92 µg/L	# Not Determined	70 130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3539205)						
EM1406830-001	QW2	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	97.4	49 135
		EP074: Trichloroethene	79-01-6	20 µg/L	89.8	64 126
EP074F: Halogenated Aromatic Compounds (QCLot: 3539205)						
EM1406830-001	QW2	EP074: Chlorobenzene	108-90-7	20 µg/L	98.0	76 128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3539206)						
EM1406830-001	QW2	EP080: C6 - C9 Fraction	----	280 µg/L	# 37.1	43 125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3539206)						
EM1406830-001	QW2	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	# 40.4	44 122
EP080: BTEXN (QCLot: 3539206)						
EM1406830-001	QW2	EP080: Benzene	71-43-2	20 µg/L	98.3	68 130
		EP080: Toluene	108-88-3	20 µg/L	98.1	72 132

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

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike Concentration	Spike Recovery (%) MS	MSD	Recovery Limits (%) Low High	Value	Control Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3538612)									
EM1406840-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	87.4	----	70 130	----	----
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3538613)									



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		Control Limit
					MS	MSD	Low	High		Value
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3538613) - continued									
EM1406840-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.0 mg/L	105	---	70	130	----
EP074E: Halogenated Aliphatic Compounds (QCLot: 3539205)									
EM1406830-001	QW2	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	97.4	---	49	135	----
		EP074: Trichloroethene	79-01-6	20 µg/L	89.8	---	64	126	----
EP074F: Halogenated Aromatic Compounds (QCLot: 3539205)									
EM1406830-001	QW2	EP074: Chlorobenzene	108-90-7	20 µg/L	98.0	---	76	128	----
EP080/074: Total Petroleum Hydrocarbons (QCLot: 3539206)									
EM1406830-001	QW2	EP080: C6 - C9 Fraction	----	280 µg/L	# 37.1	---	43	125	----
EP080/074: Total Recoverable Hydrocarbons - NEPIM 2013 (QCLot: 3539206)									
EM1406830-001	QW2	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	# 40.4	---	44	122	----
EP080: BTEXN (QCLot: 3539206)									
EM1406830-001	QW2	EP080: Benzene	71-43-2	20 µg/L	98.3	---	68	130	----
		EP080: Toluene	108-88-3	20 µg/L	98.1	---	72	132	----
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3539442)									
EM1406838-001	Anonymous	EK057G: Nitrite as N	----	0.5 mg/L	78.7	---	77	119	----
ED045G: Chloride Discrete analyser (QCLot: 3539443)									
EM1406840-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	106	---	70	130	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3539444)									
EM1406838-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	98.1	---	70	130	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 3541178)									
EM1406425-001	Anonymous	EG020A-F: Manganese	7439-96-5	0.2 mg/L	86.9	---	64	134	----
EP033: C1 - C4 Hydrocarbon Gases (QCLot: 3543961)									
EB1416813-001	Anonymous	EP033: Methane	74-82-8	27.92 µg/L	# Not Determined	---	70	130	----
EG051G: Ferrrous Iron by Discrete Analyser (QCLot: 3544229)									
EM1406924-004	Anonymous	EG051G: Ferrrous Iron	----	2 mg/L	97.2	---	70	128	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EM1406830	Page	: 1 of 8
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR SIMON WELSH	Contact	: Steven McGrath
Address	: 12 Greenhill Road, Wayville, SA, 5034 PO Box 582 UNLEY SA, AUSTRALIA 5061	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: simon.welsh@aecaust.com.au	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 08 8299 9955	Telephone	: +61-3-8549 9600
Facsimile	: +61 08 8362 9776	Facsimile	: +61-3-8549 9601
Project	: J125792 Groundwater Sampling	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: 37-41 Cliff St, Glenelg East	Date Samples Received	: 11-JUL-2014
C-O-C number	: ----	Issue Date	: 17-JUL-2014
Sampler	: SW/JL	No. of samples received	: 1
Order number	: 48231	No. of samples analysed	: 1
Quote number	: AD/003/14		

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



Page : 2 of 8
 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Analysis Holding Time Compliance

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

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

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

Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Date analysed	Due for analysis
ED037P: Alkalinity by PC Titrator					
Clear Plastic Bottle - Natural (ED037-P) QW2	10-JUL-2014	---	24-JUL-2014	11-JUL-2014	24-JUL-2014 ✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA					
Clear Plastic Bottle - Natural (ED041G) QW2	10-JUL-2014	---	07-AUG-2014	15-JUL-2014	07-AUG-2014 ✓
ED045G: Chloride Discrete analyser					
Clear Plastic Bottle - Natural (ED045G) QW2	10-JUL-2014	---	07-AUG-2014	15-JUL-2014	07-AUG-2014 ✓
ED093F: Dissolved Major Cations					
Clear Plastic Bottle - Natural (ED093F) QW2	10-JUL-2014	---	17-JUL-2014	14-JUL-2014	17-JUL-2014 ✓
EG020F: Dissolved Metals by ICP-MS					
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QW2	10-JUL-2014	---	06-JAN-2015	15-JUL-2014	06-JAN-2015 ✓
EG051G: Ferrous Iron by Discrete Analyser					
Clear Plastic Bottle - HCl - Filtered (EG051G) QW2	10-JUL-2014	---	---	16-JUL-2014	17-JUL-2014 ✓
EK055G: Ammonia as N by Discrete Analyser					
Clear Plastic Bottle - Sulfuric Acid (EK055G) QW2	10-JUL-2014	---	07-AUG-2014	14-JUL-2014	07-AUG-2014 ✓
EK057G: Nitrite as N by Discrete Analyser					
Clear Plastic Bottle - Natural (EK057G) QW2	10-JUL-2014	---	12-JUL-2014	11-JUL-2014	12-JUL-2014 ✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser					
Clear Plastic Bottle - Sulfuric Acid (EK059G) QW2	10-JUL-2014	---	07-AUG-2014	14-JUL-2014	07-AUG-2014 ✓
EK086: Sulfite as SO3 2-					
Clear Plastic Bottle - EDTA/Zinc Acetate (EK086) QW2	10-JUL-2014	---	---	10-JUL-2014	12-JUL-2014 ✓
EP033: C1 - C4 Hydrocarbon Gases					
Clear glass VOC vial - HCl (EP033) QW2	10-JUL-2014	---	---	16-JUL-2014	24-JUL-2014 ✓



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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

Method	Sample Date	Extraction / Preparation		Analysis		
		Date extracted	Due for extraction	Date analysed	Due for analysis	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Amber Glass Bottle - Unpreserved (EP071) QW2	10-JUL-2014	11-JUL-2014	17-JUL-2014	15-JUL-2014	20-AUG-2014	✓
EP074D: Fumigants						
Clear glass VOC vial - HCl (EP074) QW2	10-JUL-2014	14-JUL-2014	24-JUL-2014	14-JUL-2014	24-JUL-2014	✓
EP074E: Halogenated Aliphatic Compounds						
Clear glass VOC vial - HCl (EP074) QW2	10-JUL-2014	14-JUL-2014	24-JUL-2014	14-JUL-2014	24-JUL-2014	✓
EP074F: Halogenated Aromatic Compounds						
Clear glass VOC vial - HCl (EP074) QW2	10-JUL-2014	14-JUL-2014	24-JUL-2014	14-JUL-2014	24-JUL-2014	✓
EP074G: Trihalomethanes						
Clear glass VOC vial - HCl (EP074) QW2	10-JUL-2014	14-JUL-2014	24-JUL-2014	14-JUL-2014	24-JUL-2014	✓
EP080: BTEXN						
Clear glass VOC vial - HCl (EP080) QW2	10-JUL-2014	14-JUL-2014	24-JUL-2014	14-JUL-2014	24-JUL-2014	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013						
Clear glass VOC vial - HCl (EP080) QW2	10-JUL-2014	14-JUL-2014	24-JUL-2014	14-JUL-2014	24-JUL-2014	✓
EP125E: Halogenated Aliphatic Compounds						
Clear glass VOC vial - HCl (EP125) QW2	10-JUL-2014	----	----	14-JUL-2014	24-JUL-2014	✓



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: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count			Rate (%)		Evaluation
		QC	Regular	Actual	Expected		
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	10	20.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
C1 - C4 Gases	EP033	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfite as SO3 2-	EK086	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
VOC by HS GCMS in SIM Mode	EP125	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
C1 - C4 Gases	EP033	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfite as SO3 2-	EK086	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
VOC by HS GCMS in SIM Mode	EP125	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
C1 - C4 Gases	EP033	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected		
Analytical Methods							
Method Blanks (MB) - Continued							
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfite as SO3 2-	EK086	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
VOC by HS GCMS in SIM Mode	EP125	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
C1 - C4 Gases	EP033	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
VOC by HS GCMS in SIM Mode	EP125	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrator) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO4 Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
			Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)
			Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020; ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Ferrous Iron by Discrete Analyser	EG051G	WATER	APHA 21st ed., 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ferric Iron - Dissolved	EG053FG-MS	WATER	APHA 21st ed., 3500 Fe-B. The 0.45um filtered Ferric Iron is determined as the difference between Filtered Iron and Filtered Ferrous Iron quantify by ICPMS and Discrete Analyser.
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	APHA 21st ed., 4500-NO2- B. Nitrite is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
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 separately by direct colorimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
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 colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)



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 Work Order : EM1406830
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Analytical Methods	Method	Matrix	Method Descriptions
Sulfite as SO3 2-	EK086	WATER	In-house. (APHA 21st ed., 4500-SO32- B mod.) Sulfite is determined by standardised Iodate / Iodide titration.
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	APHA 21st Ed. 1030F. This method is compliant with NEPM (2013) Schedule B(3)
C1 - C4 Gases	EP033	WATER	Technical Guidance for the Natural Attenuation Indicators: Methane, Ethane, and Ethene, US EPA - Region 1, EPA New England, July 2001. Automated static headspace, dual column GC/FID. A 12 mL sample is pipetted into a 20 mL headspace vial containing 3g of sodium chloride and sealed. Each sample is equilibrated with shaking at 40 degrees C for 10 minutes prior to analysis by GC/FID using a pair of PLOT columns of different polarity.
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 the QC requirements of NEPM (2013) Schedule B(3)
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 (2013) Schedule B(3)
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 the QC requirements of NEPM (2013) Schedule B(3)
VOC by HS GCMS in SIM Mode	EP125	WATER	In-house: A sample is saturated with sodium chloride and achieving thermodynamic equilibrium between the water and gas phase in a closed thermostatted vessel. A reproducible headspace gas is extracted from the vial and injected into a gas chromatograph and the analyte of interest is separated by means of gas/liquid partition chromatography and quantified using automated static headspace GCMS in SIM mode.
Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 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 (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.



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 SW/846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP033: C1 - C4 Hydrocarbon Gases	EB1416813-001	Anonymous	Methane	74-82-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP080/071: Total Petroleum Hydrocarbons	EM1406830-001	QW2	C6 - C9 Fraction	----	37.1 %	43-125%	Recovery less than lower data quality objective
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EM1406830-001	QW2	C6 - C10 Fraction	C6_C10	40.4 %	44-122%	Recovery less than lower data quality objective

- For all matrices, no Method Blank value outliers occur.
 - For all matrices, no Duplicate outliers occur.
 - For all matrices, no Laboratory Control outliers occur.
- Regular Sample Surrogates**
- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist

Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.

Greencap
Sample Chain of Custody and Testing Request
Samples Submitted to Eurofins

Job no : J125792
 Purchase Order : 48082-GN
 Sheet no : 1 of 1
 sampled by : GN
 date : 13-Oct-14

client : Greencap
 project : GW testing
 location : Cliff St, Glenelg East

sample number	location	depth below surface	sample containers						material	testing required								
			Metals Bottle (filtered)	Ferric Iron Bottle (Filtered)	Glass Amber (1L)	Glass Vials (preserved)	Unpreserved Plastic (1L)	Plastic (H2SO4 preserved)		Sulphite bottle	B11 - Anion /Cation Screen	TRH/BTEX	Methane	Nitrite, Nitrate and Ammonia	VHC (low level required)	Manganese	Ferrous and Ferric Iron	SulPhate	Sulphite
GW16			X	X	X	X6	X	X	X		X	X	X	X	X	X	X	X
GW17			X	X	X	X6	X	X	X		X	X	X	X	X	X	X	X
GW18			X	X	X	X6	X	X	X		X	X	X	X	X	X	X	X
QC3			X	X	X	X6	X	X	X		X	X	X	X	X	X	X	X
RB2			X			X2							X					
TB2						X2							X					
FB2						X2							X					

low level not RPD for these SW

Notes :
 Please email results to greg.nield@greencap.com.au & simon.welsh@greencap.com.au
 Company Fax:- 08 8299 9954
 Company Phone:- 08 8299 9955

Chain of Custody:							
Relinquished by	Company	Date	Time	Received by - Name & Comp	date	time	
Greg Nield <i>GN</i>	Greencap	13-Oct		Paternal	13/10	1:45pm	

Results required by:

Results checked: by _____ date _____

Paternal 13/10 1:50pm
 # 435136

Sample Receipt Advice

Company name: **AEC Environmental**
Contact name: Greg Nield
Project name: GW TESTING CLIFF ST GLENENG EAST J 125792
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Oct 14, 2014 1:49 PM
Eurofins | mgt reference: **435136**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Sarah Gould on Phone : (+61) (8) 8154 3100 or by e.mail: SarahGould@eurofins.com.au

Results will be delivered electronically via e.mail to Greg Nield - greg.nield@greencap.com.au.

Eurofins | mgt Sample Receipt

Certificate of Analysis

AEC Environmental
12 Greenhill Road
Wayville
SA 5034



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Greg Nield**

Report **435136-W**
Project name **GW TESTING CLIFF ST GLENENG EAST J 125792**
Received Date **Oct 14, 2014**

Client Sample ID			GW16	GW17	GW18	QC3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			A14-Oc08723	A14-Oc08724	A14-Oc08725	A14-Oc08726
Date Sampled			Oct 13, 2014	Oct 13, 2014	Oct 13, 2014	Oct 13, 2014
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	0.07	0.22	0.03	0.07
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	116	110	116	114
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	0.07	0.22	0.03	0.07
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	0.07	0.22	0.03	0.07
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Halogenated Volatile Organics (selected analytes by SIM)						
1.1-Dichloroethane (SIM)	0.00001	mg/L	0.00001	< 0.001	< 0.00001	0.00001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane (SIM)	0.00001	mg/L	< 0.00001	< 0.001	< 0.00001	< 0.00001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene (SIM)	0.00001	mg/L	< 0.00001	< 0.001	< 0.00001	< 0.00001

Client Sample ID			GW16 Water	GW17 Water	GW18 Water	QC3 Water
Sample Matrix			A14-Oc08723	A14-Oc08724	A14-Oc08725	A14-Oc08726
Eurofins | mgt Sample No.			Oct 13, 2014	Oct 13, 2014	Oct 13, 2014	Oct 13, 2014
Date Sampled						
Test/Reference	LOR	Unit				
Halogenated Volatile Organics (selected analytes by SIM)						
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene (SIM)	0.00001	mg/L	< 0.00001	< 0.001	< 0.00001	< 0.00001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene (SIM)	0.00001	mg/L	0.049	0.15	0.013	0.050
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Methylene chloride (SIM)	0.00002	mg/L	< 0.00002	< 0.001	< 0.00002	< 0.00002
Tetrachloroethene (SIM)	0.00002	mg/L	0.012	0.094	0.011	0.012
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene (SIM)	0.00001	mg/L	0.016	0.021	0.0081	0.016
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride (SIM)	0.00005	mg/L	< 0.00005	< 0.005	< 0.00005	< 0.00005
Fluorobenzene (surr.)	1	%	118	113	119	115
Dissolved Gases						
Methane*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Ammonia (as N)						
Chloride	1	mg/L	1000	1100	1100	1000
Ferrous Iron - Fe ²⁺	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	5.8	4.0	4.9	5.9
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	0.03
Sulphate (as S)	5	mg/L	61	65	62	62
Sulphite (as S)	0.5	mg/L	< 1	< 1	< 1	< 1
Alkalinity						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	520	480	470	520
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Alkali Metals						
Calcium	0.5	mg/L	190	210	210	200
Magnesium	0.5	mg/L	150	150	150	150
Potassium	0.5	mg/L	8.7	8.8	8.7	9.1
Sodium	0.5	mg/L	400	400	400	420
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (filtered)	0.005	mg/L	0.026	0.019	< 0.005	0.029

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	RB2 Water A14-Oc08727 Oct 13, 2014	TB2 Water A14-Oc08728 Oct 13, 2014	FB2 Water A14-Oc08729 Oct 13, 2014
Halogenated Volatile Organics					
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluorobenzene (surr.)	1	%	115	93	101

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Oct 14, 2014	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Oct 14, 2014	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Oct 14, 2014	14 Day
Halogenated Volatile Organics (selected analytes by SIM) - Method: USEPA 8260 MGT 350A Halogenated Volatile Organics	Melbourne	Oct 14, 2014	7 Day
Dissolved Gases - Method: Eurofins | mgt Method 136 Hydrocarbons by headspace	Melbourne	Oct 14, 2014	7 Day
Halogenated Volatile Organics - Method: USEPA 8260 MGT 350A Halogenated Volatile Organics	Melbourne	Oct 14, 2014	7 Day
Ferrous Iron - Fe ²⁺ - Method: APHA 3500-Fe B. (Iron Speciation)	Melbourne	Oct 14, 2014	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 15, 2014	2 Day
Sulphite (as S) - Method: APHA 4500 Sulphite	Melbourne	Oct 15, 2014	2 Day
Heavy Metals (filtered) - Method: USEPA 6020 Heavy Metals	Melbourne	Oct 14, 2014	180 Day
Eurofins | mgt Suite 11			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 15, 2014	28 Day
Chloride - Method: MGT 1100A	Melbourne	Oct 14, 2014	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 15, 2014	7 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Oct 14, 2014	28 Day
Alkalinity - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 14, 2014	14 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Oct 14, 2014	180 Day

Melbourne
 3/5 Kingston Town Close
 Oakleigh VIC 3166
 Phone : +61 3 8564 5000
 MATA # 1261
 Site # 1254 & 14271

Sydney
 Unit F3, Building F
 16 Mac's Road
 Lane Cove West NSW 2066
 Phone : +61 2 9500 8400
 NATA # 1261 Site # 18217

Brisbane
 1/21 Silverwood Place
 Murrumbidgee QLD 4172
 Phone : +61 7 3902 4600
 NATA # 1261 Site # 20794

Company Name: AEC Environmental
Address: 12 Greenhill Road
 Wayville
 SA 5034

Project Name: GW TESTING CLIFF ST GLENENG EAST J 125792

Order No.: 48082-GN
Report #: 435136
Phone: 08 8299 9955
Fax: 08 8299 9954

Received: Oct 14, 2014 1:49 PM
Due: Oct 21, 2014
Priority: 5 Day
Contact Name: Greg Nield

Eurofins | mgt Client Manager: Sarah Gould

Sample Detail

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	Ferrous Iron - Fe2+	Iron (filtered)	Manganese (filtered)	Methane*	Nitrate (as N)	Nitrite (as N)	Sulphate (as S)	Sulphite (as S)	BTEX	Total Recoverable Hydrocarbons	Halogenated Volatile Organics (selected analytes by SIM)	Eurofins | mgt Suite 11	Halogenated Volatile Organics	
Laboratory where analysis is conducted																		
Melbourne Laboratory - NATA Site # 1254 & 14271																		
Sydney Laboratory - NATA Site # 18217																		
Brisbane Laboratory - NATA Site # 20794																		
External Laboratory																		
GW16	Oct 13, 2014		Water	A14-Oc08723	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GW17	Oct 13, 2014		Water	A14-Oc08724	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GW18	Oct 13, 2014		Water	A14-Oc08725	X	X	X	X	X	X	X	X	X	X	X	X	X	X
QC3	Oct 13, 2014		Water	A14-Oc08726	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RB2	Oct 13, 2014		Water	A14-Oc08727														X
TB2	Oct 13, 2014		Water	A14-Oc08728														X
FB2	Oct 13, 2014		Water	A14-Oc08729														X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/L	< 0.02		0.02	Pass	
TRH C10-C14	mg/L	< 0.05		0.05	Pass	
TRH C15-C28	mg/L	< 0.1		0.1	Pass	
TRH C29-C36	mg/L	< 0.1		0.1	Pass	
Method Blank						
BTEX						
Benzene	mg/L	< 0.001		0.001	Pass	
Toluene	mg/L	< 0.001		0.001	Pass	
Ethylbenzene	mg/L	< 0.001		0.001	Pass	
m&p-Xylenes	mg/L	< 0.002		0.002	Pass	
o-Xylene	mg/L	< 0.001		0.001	Pass	
Xylenes - Total	mg/L	< 0.003		0.003	Pass	
Method Blank						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/L	< 0.02		0.02	Pass	
TRH C6-C10	mg/L	< 0.02		0.02	Pass	
TRH C6-C10 less BTEX (F1)	mg/L	< 0.02		0.02	Pass	
TRH >C10-C16	mg/L	< 0.05		0.05	Pass	
TRH >C16-C34	mg/L	< 0.1		0.1	Pass	
TRH >C34-C40	mg/L	< 0.1		0.1	Pass	
Method Blank						
Halogenated Volatile Organics (selected analytes by SIM)						
1.1-Dichloroethane (SIM)	mg/L	< 0.00001		0.00001	Pass	
1.1-Dichloroethene	mg/L	< 0.001		0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001		0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001		0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001		0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001		0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001		0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001		0.001	Pass	
1.2-Dichloroethane (SIM)	mg/L	< 0.00001		0.00001	Pass	
1.2-Dichloropropane	mg/L	< 0.001		0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001		0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001		0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001		0.001	Pass	
1.4-Dichlorobenzene (SIM)	mg/L	< 0.00001		0.00001	Pass	
Bromodichloromethane	mg/L	< 0.001		0.001	Pass	
Bromoform	mg/L	< 0.001		0.001	Pass	
Bromomethane	mg/L	< 0.001		0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001		0.001	Pass	
Chlorobenzene (SIM)	mg/L	< 0.00001		0.00001	Pass	
Chloroform	mg/L	< 0.005		0.005	Pass	
Chloromethane	mg/L	< 0.001		0.001	Pass	
cis-1.2-Dichloroethene (SIM)	mg/L	< 0.00001		0.00001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001		0.001	Pass	
Dibromochloromethane	mg/L	< 0.001		0.001	Pass	
Dibromomethane	mg/L	< 0.001		0.001	Pass	
Iodomethane	mg/L	< 0.001		0.001	Pass	
Methylene chloride (SIM)	mg/L	< 0.00002		0.00002	Pass	
Tetrachloroethene (SIM)	mg/L	< 0.00002		0.00002	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
trans-1.2-Dichloroethene	mg/L	< 0.001		0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001		0.001	Pass	
Trichloroethene (SIM)	mg/L	< 0.00001		0.00001	Pass	
Trichlorofluoromethane	mg/L	< 0.001		0.001	Pass	
Vinyl chloride (SIM)	mg/L	< 0.00005		0.00005	Pass	
Method Blank						
Dissolved Gases						
Methane*	mg/L	< 0.05		0.05	Pass	
Method Blank						
Halogenated Volatile Organics						
1.1-Dichloroethane	mg/L	< 0.001		0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001		0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001		0.001	Pass	
Chlorobenzene	mg/L	< 0.001		0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001		0.001	Pass	
Methylene Chloride	mg/L	< 0.001		0.001	Pass	
Tetrachloroethene	mg/L	< 0.001		0.001	Pass	
Trichloroethene	mg/L	< 0.001		0.001	Pass	
Vinyl chloride	mg/L	< 0.001		0.001	Pass	
Method Blank						
Ammonia (as N)	mg/L	< 0.01		0.01	Pass	
Chloride	mg/L	< 1		1	Pass	
Ferrous Iron - Fe2+	mg/L	< 0.05		0.05	Pass	
Nitrate (as N)	mg/L	< 0.02		0.02	Pass	
Nitrite (as N)	mg/L	< 0.02		0.02	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Sulphite (as S)	mg/L	< 0.5		0.5	Pass	
Method Blank						
Alkalinity						
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20		20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10		10	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
Method Blank						
Heavy Metals						
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	101		70-130	Pass	
TRH C10-C14	%	77		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	118		70-130	Pass	
Toluene	%	109		70-130	Pass	
Ethylbenzene	%	107		70-130	Pass	
m&p-Xylenes	%	115		70-130	Pass	
Xylenes - Total	%	114		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Naphthalene	%	86	75-125	Pass			
TRH C6-C10	%	93	70-130	Pass			
TRH >C10-C16	%	77	70-130	Pass			
LCS - % Recovery							
Halogenated Volatile Organics (selected analytes by SIM)							
1.1.1-Trichloroethane	%	124	70-130	Pass			
LCS - % Recovery							
Dissolved Gases							
Methane*	%	108	70-130	Pass			
LCS - % Recovery							
Halogenated Volatile Organics							
1.2-Dichloroethane	%	93	70-130	Pass			
Trichloroethene	%	88	70-130	Pass			
LCS - % Recovery							
Ammonia (as N)	%	95	70-130	Pass			
Chloride	%	107	70-130	Pass			
Ferrous Iron - Fe2+	%	102	70-130	Pass			
Nitrate (as N)	%	99	70-130	Pass			
Nitrite (as N)	%	101	70-130	Pass			
Sulphate (as S)	%	106	70-130	Pass			
LCS - % Recovery							
Alkalinity							
Bicarbonate Alkalinity (as CaCO3)	%	76	70-130	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	100	70-130	Pass			
Magnesium	%	103	70-130	Pass			
Potassium	%	97	70-130	Pass			
Sodium	%	99	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Iron (filtered)	%	93	80-120	Pass			
Manganese (filtered)	%	92	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Dissolved Gases				Result 1			
Methane*	S14-Oc09053	NCP	%	105	70-130	Pass	
Spike - % Recovery							
				Result 1			
Ammonia (as N)	M14-Oc09565	NCP	%	94	70-130	Pass	
Chloride	M14-Oc09699	NCP	%	104	70-130	Pass	
Ferrous Iron - Fe2+	M14-Oc10263	NCP	%	96	70-130	Pass	
Nitrate (as N)	M14-Oc09644	NCP	%	102	70-130	Pass	
Nitrite (as N)	M14-Oc09644	NCP	%	94	70-130	Pass	
Sulphate (as S)	M14-Oc10028	NCP	%	121	70-130	Pass	
Spike - % Recovery							
Alkalinity				Result 1			
Bicarbonate Alkalinity (as CaCO3)	M14-Oc09299	NCP	%	107	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Iron (filtered)	M14-Oc08521	NCP	%	101	70-130	Pass	
Manganese (filtered)	M14-Oc08521	NCP	%	100	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1			

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	A14-Oc08724	CP	%	105			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	A14-Oc08724	CP	%	103			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	A14-Oc08724	CP	%	101			70-130	Pass	
Magnesium	A14-Oc08724	CP	%	97			70-130	Pass	
Potassium	A14-Oc08724	CP	%	92			70-130	Pass	
Sodium	A14-Oc08724	CP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	A14-Oc08728	CP	%	91			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	A14-Oc08728	CP	%	102			70-130	Pass	
Toluene	A14-Oc08728	CP	%	103			70-130	Pass	
Ethylbenzene	A14-Oc08728	CP	%	103			70-130	Pass	
m&p-Xylenes	A14-Oc08728	CP	%	110			70-130	Pass	
o-Xylene	A14-Oc08728	CP	%	106			70-130	Pass	
Xylenes - Total	A14-Oc08728	CP	%	109			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	A14-Oc08728	CP	%	99			70-130	Pass	
TRH C6-C10	A14-Oc08728	CP	%	83			70-130	Pass	
Spike - % Recovery									
Halogenated Volatile Organics (selected analytes by SIM)				Result 1					
1.1.1-Trichloroethane	A14-Oc08728	CP	%	120			70-130	Pass	
1.2-Dichlorobenzene	A14-Oc08728	CP	%	101			70-130	Pass	
Spike - % Recovery									
Halogenated Volatile Organics				Result 1					
1.2-Dichloroethane	A14-Oc08728	CP	%	107			70-130	Pass	
Trichloroethene	A14-Oc08728	CP	%	103			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	A14-Oc08723	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	A14-Oc08723	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	A14-Oc08723	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	A14-Oc08723	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	A14-Oc08723	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	A14-Oc08723	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M14-Oc09644	NCP	mg/L	0.032	0.034	8.0	30%	Pass	
Chloride	M14-Oc10028	NCP	mg/L	2200	2200	<1	30%	Pass	
Ferrous Iron - Fe2+	M14-Oc10263	NCP	mg/L	0.070	0.070	3.4	30%	Pass	
Nitrate (as N)	M14-Oc09644	NCP	mg/L	0.024	0.029	19	30%	Pass	
Nitrite (as N)	M14-Oc09644	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Sulphate (as S)	M14-Oc10028	NCP	mg/L	35	35	1.9	30%	Pass	
Sulphite (as S)	S14-Oc09235	NCP	mg/L	< 2.5	< 2.5	<1	30%	Pass	

Duplicate								
Alkalinity				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	A14-Oc08723	CP	mg/L	520	500	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	A14-Oc08723	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	M14-Oc08521	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Manganese (filtered)	M14-Oc08521	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Dissolved Gases				Result 1	Result 2	RPD		
Methane*	A14-Oc08724	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	A14-Oc08724	CP	mg/L	210	200	4.0	30%	Pass
Magnesium	A14-Oc08724	CP	mg/L	150	150	1.0	30%	Pass
Potassium	A14-Oc08724	CP	mg/L	8.8	8.3	6.0	30%	Pass
Sodium	A14-Oc08724	CP	mg/L	400	390	2.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	A14-Oc08727	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	A14-Oc08727	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	A14-Oc08727	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	A14-Oc08727	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C6-C10	A14-Oc08727	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	A14-Oc08727	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Halogenated Volatile Organics (selected analytes by SIM)				Result 1	Result 2	RPD		
1,1-Dichloroethene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,1,1-Trichloroethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,1,1,2-Tetrachloroethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,1,2-Trichloroethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,1,2,2-Tetrachloroethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,2-Dibromoethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,2-Dichlorobenzene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,2-Dichloropropane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,2,3-Trichloropropane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,3-Dichlorobenzene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,3-Dichloropropane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromodichloromethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromoform	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Bromomethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Carbon Tetrachloride	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chloroform	A14-Oc08727	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Chloromethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1,3-Dichloropropene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromochloromethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibromomethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iodomethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Halogenated Volatile Organics (selected analytes by SIM)				Result 1	Result 2	RPD		
trans-1,2-Dichloroethene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
trans-1,3-Dichloropropene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichlorofluoromethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Halogenated Volatile Organics				Result 1	Result 2	RPD		
1,1-Dichloroethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,2-Dichloroethane	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
1,4-Dichlorobenzene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chlorobenzene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
cis-1,2-Dichloroethene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Methylene Chloride	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Tetrachloroethene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trichloroethene	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Vinyl chloride	A14-Oc08727	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

Sarah Gould	Analytical Services Manager
Carroll Lee	Senior Analyst-Organic (VIC)
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : EM1410775

<p>Client : AEC ENVIRONMENTAL PTY LTD Contact : MR SRES I OELD HQ Address : hA SreenVil RoaGd1 ayvilledNHd2, 50 34 PoB2xA 81 LEU NHdH8 NYRHLd1 2, Th</p> <p>E7mail : prep-nielG preenca6-com-au Yele6Vone : wTh , x xA@@@2 +acsimile : wTh , x x5TA @VT</p> <p>3roect : FhA2V@SrounG ater Nam6linp 4 rGer number : 0x, x57S1 C74 7C number : 7777 Nite : 5V70h CliJNtreetdSenelp Ea Nam6ler : SI</p>	<p>Laboratory : Environmental Division Melbourne Contact : Nteven McSratW HQ Address : 0 1 estall RGN6rinpvale g@ Hustralia 5hVh</p> <p>E7mail : steven-mcpratW alsenviro-com Yele6Vone : wTh757x20@@ , , +acsimile : wTh757x20@@ , h</p> <p>3ape : h oJ5</p> <p>f uote number : EMA, h0HDEE1 g, hxh QID(, 52(h5 gA/ f C Level : I E3M A, h5 NcV6Gule P@/ anG HLN f CN5 re) uirement</p>
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Dates

<p>Date Nam6les ReceiveG : h274 CY7A, h0 Client Re) uesteGDue Date : AA74 CY7A, h0</p>	<p>Qsue Date : hT74 CY7A, h0 h0:, T NcV6GuleGRe6ortinp Date : 22-OCT-2014</p>
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Delivery Details

<p>MoGe oJDelivery : Carrier I o- oJcoolers(boBes : h Neurity Neal : @tact-</p>	<p>Yem6erature : h, -h7h, -T 7Qe 6resent I o- oJsam6les receiveG : h I o- oJsam6les analyseG : h</p>
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General Comments

- YV6 re6ort contains tV6 .blloj inp inJbrmation:
 - 7 Nam6le Container@/(3reservation I on7Com6liances
 - 7 Nummary oJNam6le@/ anGRe) uesteGHnalysis
 - 7 3roactive q oIGnp Yime Re6ort
 - 7 Re) uesteGDdeliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample was received in non-ALS containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.**
- **Analytical work for this work order will be conducted at ALS Springvale and ALS Sydney.**
- Nam6le Dis6osal 7H) ueous Q0 Gays/dNoliGQ, Gays/ Jom Gate oJcom6letion oJk orGer-

Issue Date : hT74 CY7A, h0 h0:, T
 3ape : A oJ5
 1 ork 4 rGær : EMh0h, W2
 Client : HEC EI gØ4 I MEI YHL 3YU LYD



Sample Container(s)/Preservation Non-Compliances

Hold comparisons are made against pretreatment (preservation) HNDH3 q Hd8 NE3 H stanGærGs-

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

Summary of Sample(s) and Requested Analysis

Some items describe below may be part of a laboratory process necessary for the execution of client requested tasks- Packages may contain additional analyses such as the determination of moisture content and degradation tasks that are included in the package-
 The no sampling time is provided the sampling time will be built to h2:, on the date of sampling- The no sampling date is provided the sampling date will be assumed by the laboratory for processing purposes and will be shown in brackets if it is a time component-

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICPMS	WATER - EG051G Ferrous Iron by Discrete Analyser	WATER - EG053FG-MS Dissolved Ferric Iron by ICPMS/DA	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK086 Sulfite as SO3-	WATER - EP033 - Methane Methane in Water	WATER - EP125-X MELB VOCs by HS GCMS in SIM Mode (extended list inc.	WATER - NT-01 & 02 Major Cations & Anions (Ca, Mg, Na, K, Cl, SO4,
EMh0h, W27, , h	h574 CY7A, h0 h2:, ,	f C0	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - NT-04 Nitrite and Nitrate	WATER - W-04 TRH/BTEXN
EMh0h, W27, , h	h574 CY7A, h0 h2:, ,	f C0	✓	✓

Proactive Holding Time Report

Names/ have been received with the recommended holding times for the requested analysis-

Issue Date : hT74 CY7A, h0 h0:, T
3ape : 5 oJ5
1 ork 4 rGer : EMh0h, W2
Client : HEC EI g@4 I MEI YHL 3YU LYD



Requested Deliverables

Accounts Jenny Morden

7 H0 7H8 YaB@voice QDg /

Email jenny-morden@preenca6-com-au

MR ANDREW DURAND

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email andrew.durand@preenca6-com-au

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email andrew.durand@preenca6-com-au

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email andrew.durand@preenca6-com-au

7 H0 7H8 Namble Receipt Information Environmental qY QNRI

Email andrew.durand@preenca6-com-au

7 H0 7H8 YaB@voice QDg /

Email andrew.durand@preenca6-com-au

7 CVain oJCustoGy CoC/ QC4 C /

Email andrew.durand@preenca6-com-au

7 EDO+ormat 7EI MRS QEI MRS /

Email andrew.durand@preenca6-com-au

7 EDO+ormat 7ENDHY QENDHY /

Email andrew.durand@preenca6-com-au

MR GREG NIELD

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email greg.nield@preenca6-com-au

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email greg.nield@preenca6-com-au

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email greg.nield@preenca6-com-au

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Email greg.nield@preenca6-com-au

7 H0 7H8 YaB@voice QDg /

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7 CVain oJCustoGy CoC/ QC4 C /

Email greg.nield@preenca6-com-au

7 EDO+ormat 7EI MRS QEI MRS /

Email greg.nield@preenca6-com-au

7 EDO+ormat 7ENDHY QENDHY /

Email greg.nield@preenca6-com-au

MR SIMON WELSH

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email simon.welsh@preenca6-com-au

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email simon.welsh@preenca6-com-au

7 *H8 Certificate of Analysis 71 HYH QC4 H /

Email simon.welsh@preenca6-com-au

7 H0 7H8 Namble Receipt Information Environmental qY QNRI

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7 H0 7H8 YaB@voice QDg /

Email simon.welsh@preenca6-com-au

7 CVain oJCustoGy CoC/ QC4 C /

Email simon.welsh@preenca6-com-au

7 EDO+ormat 7EI MRS QEI MRS /

Email simon.welsh@preenca6-com-au

7 EDO+ormat 7ENDHY QENDHY /

Email simon.welsh@preenca6-com-au



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: EM1410775	Page	: of 7L
Client	: AEC ENVIRONMENTAL PTY LTD	Project Name	: vEmif ED eEyal Mmnsf E u elrf ctEe
Address	: u S I Sv l ON bM	Client Name	: WYneE u R t ayH
Site	: oAl teeEHl Sf and2 aOrmltdWgd, . 53 P4 Bf x, 1A	Client Address	: 3 2 esyall Sh W6trEgmaie pNI Gcsytalra 5oLo
Location	: 8ObvU WgdG8 WYSGbNS, . To	Client Contact	: syneEOD RgtayH alseEmif OF D
Analyst	: gtegeEreih- gteeER66RF D0ac	Client Email	: wToV6M, 3@@.
Analyst	: wTo . 1 1A@@@,	Client Phone	: wToV6M, 3@@. 0
Analyst	: wTo . 1 15TA @LLT	Client Address	: Ov Pu A o5 WRtehcle B0(aEh GbWJ i W5 te) cteDeEy
Analyst	: 9oA, L@l lf cEhj ayet WAd6lEg	Client Address	: o, V i Y A, o3
Analyst	: 31. 15V O	Client Address	: AA i Y A, o3
Analyst	: WW	Client Address	: 0
Analyst	: I O	Client Address	: 0
Analyst	: 5LX8o i lr7WfteeYdl leEelg v a		
Analyst	: GMq 5, q5 pA		

YHs te6f ty sc6etsehes aEC 6tenm cs te6f tyG(j nyH yHs te7eteERe0 Sesclys a66IC yf yHe saD6leG(as scrDnyeh0 GI 6ages f7 yHs te6fty Hane reeE RteRreh aEh a66tf meh 7t release0

YHs i etyRape f 7GEalOsrR EjanEs yHe 7 llf j rEg rE7 tDayf E:

- I eEetal i f DD eEys
- GEalORal Sesclys
- Wcttf gaye i f Eyf l bID nys



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General Comments

Yhe aEalQrAl 6if Rehctes cseh r C yHe vEnmfEDeEjal Mmnsif E Hane reeE heneif6eh 7fD esyrlnshHh rEjetEayfEallic teRfgEKeh 6if Rehctes scRH as yHf se 6crlnshHh r C yHe 8WPGd GPzGd GW aEh OvPu 0 NE Hf cse heneif 6eh 6if Rehctes ate eD6if Goh rE yHe arseERe f 7hf RcdEYeh sjaEhaths f t r CRneEYte)cesy0

- 2 Hete Dfrasycte heyetDreayf E Hs r eeE 6et 7fD ehtdesclys ate te6f tyeh f Ea htCj engHy r asis0
- 2 Hete a te6f tyeh less yHE G(tesclyrs Hghet yHE yHe b4 SdyHs DaCre hce yf 6trD atCsaD6le exyarXyngesyaje hntcyf E aEhtq t rEsc 7fReEysaD6le 7 t aEalQsr0
- 2 Hete yHe b4 S f 7a te6f tyeh tesclyhnt6eis 7fD sjaEhath b4 SdyHs DaCre hce yf HgHDfrasycte R EjeEjdiEsc 7fReEysaD6le QehcReh j engHy eD6if Goh(f t Dayrx rEjeteteERe0
- 2 Hete saD6lEg yDe rE 7fD ayf E rE Efy6f nmech r C yHe RieEysaD6lEg hayes ate shf j E j nfh cya yDe rE D6f EeEj0 NE yHese rEysaEResdyHe yDe rE D6f EeEyh r eeE asscDeh r C yHe larrf tay tC 7 t 6if ResisEg 6ct6f ses0
- 2 Hete a tesclyrs te) citeh yf Deey rE D6lERe lrd yns yHe assf Rayeh cERayarEjCDcsyr e rE Esmetch0Sezet yf yHe GbWl f EyaRy 7 t heyenS0

KeC: i GWOCdret = i GWtegrsXCecDret 7fD hayer ase DaifEanEeh rCi HeDfRal GrsyaRys W6tmfE rE a hmsif E f 7yHe GDetrE E i HeDfRal Wf Rey00
 b4 S = bDyrf 7te6f tyEg
 ^ = YHs tesclyrs R D6cyeh 7fD rEhmmical aEalQe heyeyrf Es ayf t arf me yHe lenel f 7te6f tyEg

- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- EK055G: LOR has been raised for Ammonia as N due to laboratory background observed in the Method Blank
- EP080/074: Particular sample (EMI1410775 - 001) shows minor positive hit of C6-C9/C6-C10 band due to the presence of Halogenated Aliphatics.
- Full Site Address: 37-41 Cliff Street, Glenelg East.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Methane (EP033) conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.



WORLD RECOGNISED
ACCREDITATION

OGYG GRRrehneh barf tay tC1A	Signatories	Position	Accreditation Category
GRRrehneh 7f t R D6lERe j nH IM4 qv i oL. A. 0	YHs hf RcdEY Has reeE eleryf E rAllic sigEeh r C yHe acyHf tikeh sigEayf tres rEhRayeh relf j 0 vlerYf ER sigEeg Has reeE Rattneh f cy rE R D6lERe j nH6lff Rehctes s6eR7teh rE Ao i FS Paty000		
	i Hrs beDanye MhaEnFetEaEnf OaERC2 aEg PHala/ NEyha/ esf Ee	Of Evi eyals Yead beahet WeErt Nf tgaERi HeD rsy WeErt WeD mflayte NesycDeEyi HeD rsy barf tay tCu aEaget V4 tgaERs	u elir fctEe Nf tgaERs u elir fctEe Nf tgaERs u elir fctEe 4 tgaERs WChEeC4 tgaERs



Page : 5 of 7
 2 of 4 thet : vu o3o. LL,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYm
 Ptf eFy : 9oA L@ | ff cEhij ayt WdD6llEg

Analytical Results

Compound	CAS Number	LOR	Unit	Client sample ID		
				Client sampling date / time	QC4	
ED037P: Alkalinity by PC Titrator						
Hydroxide Alkalinity as CaCO3	Mu 4 Vbo. V. o	o	Dgph	WW	WW	WW
Carbonate Alkalinity as CaCO3	51oA6AVT	o	Dgph	WW	WW	WW
Bicarbonate Alkalinity as CaCO3	LoV AV6	o	Dgph	WW	WW	WW
Total Alkalinity as CaCO3	WW	o	Dgph	WW	WW	WW
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA						
Sulfate as SO4 - Turbidimetric	o31. 1V@M	o	Dgph	WW	174	WW
ED045G: Chloride Discrete analyser						
Chloride	oT11LV. VT	o	Dgph	WW	1070	WW
ED093F: Dissolved Major Cations						
Calcium	L33. V. VA	o	Dgph	WW	182	WW
Magnesium	L35@V8	o	Dgph	WW	158	WW
Sodium	L33. VAV	o	Dgph	WW	419	WW
Potassium	L33. V @L	o	Dgph	WW	7	WW
EG020F: Dissolved Metals by ICP-MS						
Manganese	L35@V	.0. o	Dgph	WW	0.027	WW
Iron	L35@V	.0.	Dgph	WW	<.0.	WW
EG051G: Ferrrous Iron by Discrete Analyser						
Ferrous Iron	WW	.0.	Dgph	WW	<.0.	WW
EG053FG-MS: Dissolved Ferric Iron by ICPMS and DA						
Ferric Iron	WW	.0.	Dgph	WW	<.0.	WW
EK055G: Ammonia as N by Discrete Analyser						
Ammonia as N	LTT38oV	.0 o	Dgph	WW	0.05	WW
EK057G: Nitrite as N by Discrete Analyser						
Nitrite as N	WW	.0 o	Dgph	WW	0.03	WW
EK058G: Nitrate as N by Discrete Analyser						
Nitrate as N	o3L@V. V	.0 o	Dgph	WW	5.41	WW
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser						
Nitrite + Nitrate as N	WW	.0 o	Dgph	WW	5.44	WW
EK086: Sulfite as SO3 2-						
Sulfite as SO3 2-	o3AT. V8. V6	A	Dgph	WW	<A	WW
EN055: Ionic Balance						
Total Anions	WW	.0 o	De) φ	WW	43.9	WW
Total Cations	WW	.0 o	De) φ	WW	40.5	WW



Analytical Results

Compound	CAS Number	LOR	Unit	Client sampling date / time	Client sample ID	QC4	WW	WW	WW	WW	WW	WW
EN055: Ionic Balance - Continued												
Ionic Balance	WW	.00	%			4.04	WW	WW	WW	WW	WW	WW
EP033: C1 - C4 Hydrocarbon Gases												
Methane	L3MAI	o.	µgpb			<.0.	WW	WW	WW	WW	WW	WW
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	WW	A	µgpb			50	WW	WW	WW	WW	WW	WW
C10 - C14 Fraction	WW	..	µgpb			<.1.	WW	WW	WW	WW	WW	WW
C15 - C28 Fraction	WW	o..	µgpb			<.0..	WW	WW	WW	WW	WW	WW
C29 - C36 Fraction	WW	..	µgpb			<.1.	WW	WW	WW	WW	WW	WW
C10 - C36 Fraction (sum)	WW	..	µgpb			<.1.	WW	WW	WW	WW	WW	WW
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions												
C6 - C10 Fraction	i T_j o.	A	µgpb			50	WW	WW	WW	WW	WW	WW
C6 - C10 Fraction minus BTEX (F1)	i T_j o. \B\y\X	A	µgpb			50	WW	WW	WW	WW	WW	WW
>C10 - C16 Fraction	>i o. _j oT	o..	µgpb			<.0..	WW	WW	WW	WW	WW	WW
>C16 - C34 Fraction	WW	o..	µgpb			<.0..	WW	WW	WW	WW	WW	WW
>C34 - C40 Fraction	WW	o..	µgpb			<.0..	WW	WW	WW	WW	WW	WW
>C10 - C40 Fraction (sum)	WW	o..	µgpb			<.0..	WW	WW	WW	WW	WW	WW
>C10 - C16 Fraction minus Naphthalene (F2)	WW	o..	µgpb			<.0..	WW	WW	WW	WW	WW	WW
EP080: BTEXN												
Benzene	Lo\8VA	o	µgpb			<.0	WW	WW	WW	WW	WW	WW
Toluene	o. 1M1V5	A	µgpb			<.A	WW	WW	WW	WW	WW	WW
Ethylbenzene	o. . \8o\8	A	µgpb			<.A	WW	WW	WW	WW	WW	WW
meta- & para-Xylene	o. 1\51V5 o. T\8AV5	A	µgpb			<.A	WW	WW	WW	WW	WW	WW
ortho-Xylene	@\8LVT	A	µgpb			<.A	WW	WW	WW	WW	WW	WW
Total Xylenes	o55. VA. VL	A	µgpb			<.A	WW	WW	WW	WW	WW	WW
Sum of BTEX	WW	o	µgpb			<.0	WW	WW	WW	WW	WW	WW
Naphthalene	@\VA. V5	,	µgpb			<.1.	WW	WW	WW	WW	WW	WW
EP125D: Fumigants												
1,2-Dichloropropane	L1MLV	.0	µgpb			<.0	WW	WW	WW	WW	WW	WW
cis-1,3-Dichloropropylene	o. . ToV oV	.0	µgpb			<.0	WW	WW	WW	WW	WW	WW
trans-1,3-Dichloropropylene	o. . ToV AVT	.0	µgpb			<.0	WW	WW	WW	WW	WW	WW
1,2-Dibromoethane (EDB)	o. T\@V\8	.0	µgpb			<.0	WW	WW	WW	WW	WW	WW
EP125E: Halogenated Aliphatic Compounds												



Analytical Results

Wtr:U aytX: WATER (u aytX: WATER)

Compound	CAS Number	LOR	Client sampling date / time		QC4	WW	WW	WW	WW	WW
			Unit	Unit						
EP125E: Halogenated Aliphatic Compounds - Continued										
Dichlorodifluoromethane	L, V, oVI	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
Vinyl chloride	L, V, oV8	. 05	µgpb		<. 05	WW	WW	WW	WW	WW
Bromomethane	L3M5V@	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
Chloroethane	L, V, V5	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
Trichlorofluoromethane	L, V, T@8	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
1,1-Dichloroethene	L, V, V8	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
Dichloromethane	L, V, @A	o0	µgpb		<o0	WW	WW	WW	WW	WW
trans-1,2-Dichloroethene	o, T, V, V	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
1,1-Dichloroethane	L, V63V5	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
cis-1,2-Dichloroethene	o, T, V, @A	. 0	µgpb		65.3	WW	WW	WW	WW	WW
Bromochloromethane	L3V@V	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
1,2-Dichloroethane	o, LV, T, V, A	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
1,1,1-Trichloroethane	LoV, V, T	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
Carbon Tetrachloride	, T, V, A5V	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
Trichloroethene	L@, oV, T	. 0,	µgpb		12.1	WW	WW	WW	WW	WW
Tetrachloroethene	oAL, V, V8	. 0,	µgpb		8.35	WW	WW	WW	WW	WW
Hexachlorobutadiene	1LV, T, V5	. 0, 3	µgpb		<. 0, 3	WW	WW	WW	WW	WW
1,2-Dichloroethene (sum cis & trans)	WW	. 0,	µgpb		65.3	WW	WW	WW	WW	WW
1,2-Dibromo-3-chloropropane	@, V, oVI	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
EP125F: Halogenated Aromatic Compounds										
Chlorobenzene	o, 1V, @, V	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
Bromobenzene	o, 1V, T, V6	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
Benzylchloride	o, ., V83V	. 0A	µgpb		<. 0A	WW	WW	WW	WW	WW
1,3-Dichlorobenzene	, 3oV, V5V6	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
1,4-Dichlorobenzene	o, T, V8TV	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
1,2-Dichlorobenzene	@, V, ., V6	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW
2-Chlorotoluene	@, V8@, V	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
4-Chlorotoluene	o, T, V85V8	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
1,2,4-Trichlorobenzene	oA, V, A, V6	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
1,2,3-Trichlorobenzene	1LV, T, oV, T	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
Trichlorobenzenes (Sum)	WW	. 0	µgpb		<. 0	WW	WW	WW	WW	WW
EP125G: Trihalomethanes										
Chloroform	TL, V, T, V6	. 0,	µgpb		1.13	WW	WW	WW	WW	WW
Bromodichloromethane	L, V, AL, V8	. 0,	µgpb		<. 0,	WW	WW	WW	WW	WW



Page : T f 7L
 2 f f / 4 thet : v u o3o. LL,
 i lreEy : Gv i vOp1S4 Ou vOYGb PYU bYM
 Ptf eFy : 9oA LCA l ff cEhij ajet WdD6lIEg

Analytical Results

Wt r U ayt x: WATER (u ayt x: WATER)

Compound	CAS Number	LOR	Client sampling date / time		QC4	WW	WW	WW	WW	WW	WW
			Unit	Unit							
EP125G: Trihalomethanes - Continued											
Dibromochloromethane	oA3V1V6	. 0.	µgpb		< . 0.	WW	WW	WW	WW	WW	WW
Bromoform	L, VA, VA	. 0.	µgpb		< . 0.	WW	WW	WW	WW	WW	WW
Total Trihalomethanes	WW	. 0.	µgpb		1.13	WW	WW	WW	WW	WW	WW
EP080S: TPH(V)/BTEX Surrogates											
1,2-Dichloroethane-D4	oL, T, V LV	. 0	%		94.0	WW	WW	WW	WW	WW	WW
Toluene-D8	A, 5LVATV	. 0	%		90.1	WW	WW	WW	WW	WW	WW
4-Bromofluorobenzene	3T, V, V8	. 0	%		100	WW	WW	WW	WW	WW	WW
EP125S: VOC Surrogates											
1,2-Dichloroethane-D4	oL, T, V LV	. 0	%		99.8	WW	WW	WW	WW	WW	WW
Toluene-D8	A, 5LVATV	. 0	%		97.8	WW	WW	WW	WW	WW	WW
4-Bromofluorobenzene	3T, V, V8	. 0	%		89.6	WW	WW	WW	WW	WW	WW



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2 f t / 4 thet : v u o3o. LL,
i lreEy : Gv i vOp 184 Ou v OY Gb PYU bYM
Pt f eFy : 9oA, L@A | f f cEh j aye t WdD6lIEg

Surrogate Control Limits

Compound	CAS Number	Recovery Limits (%)	
		Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	oL. T. V LV A. 5LVATV	L5 L.	oA@ oA.
4-Bromofluorobenzene	3T. V. V8	Lo	oA@
EP125S: VOC Surrogates			
1,2-Dichloroethane-D4	oL. T. V LV A. 5LVATV	L5 T1	o5. oA1
4-Bromofluorobenzene	3T. V. V8	Lo	oA.

QUALITY CONTROL REPORT

Work Order	: EM1410668	Page	: of Loo
i lieEy	: AEC EN3IRONMMENTAL PTY LTV	barf taytC	: vEmif EDeEyal Mmnsrf Eu eirf ctEe
i f EjaRy	: u S I Sv l ON bM	i f EjaRy	: WjereEu Ri tayH
Ghntess	: oAl teeEHil Sf ahd2 aOmitedWgd, . 53 P4 Bf x, 1A 8 ObvU WgdG8 WYS GbN6, . To	Ghntess	: 3 2 esyll Sh W6trEgmaie pNI Gcsyalra 5oVo
v Dait	: gtegeElh- gteeERa6rR D0ac	v Dait	: syeneEOD RgtayH aiseEmif rR D
Yele6H Ee	: wTo . 1 1A@@@,	Yele6H Ee	: wTo 7571, 3@@.
FaRsdite	: wTo . 1 15TA @VT	FaRsdite	: wTo 7571, 3@@. o
Ptf eRy	: 9oA, V@a l tf cEhj ajet WAD6irEg	J i beneI	: OVPu A. o5 WRHehcle B@/ aEh GbWJ i W5 te) citeDeEy
Wye	: 5V73o i iNLWfteeYdl leEeig va	Maye WAD6ies SeReneh	: o, 74 i Y7A o3
i 74 7 EcDret	: 777	W5sce Maye	: AA74 i Y7A o3
WAD6let	: I O	Of Of LsaD6ies teReneh	: o
4 thet EcDret	: 31. 1571 O	Of Of LsaD6ies aEalCseh	: o
J cf ye EcDret	: GMq 5, 05 pA		

YHs te6f ty sc6etsehes aEC 6temif cs te6f ty@ (j r)H yHs teleteERe0 Sesclys a66IC yf yHe saD6leG(as scr Dnyeh0 GI 6ages f L yHs te6f ty Hane reeE RteR eh aEh a66tf meh lft telease0

- YHs J calyCi f Eyf l Se6f tyR EyarEs yHe lf liff j rEg rElf tDayf E:
- barf tayf tCM66irEaye @B P(Se6f tykSelayme PetReEage MitleteERe @PM/ aEh GRRe6jaERe brDnys
 - u eyH h BlaE/ @ B(aEh barf tayf tCi f Eyf l W6ir e @i W Se6f tykSeRf metCaEh GRRe6jaERe brDnys
 - u ayix W6ir e @ W Se6f tykSeRf metCaEh GRRe6jaERe brDnys



Page : Af LOO
 2 f/ 4 thet : vu o3o. W,
 i lreEy : Gvi vOp14 Ou vOYGb PYU bYM
 Ptf eFy : 9oA V@a l ffcEhij ayet W@d6llEg

General Comments

YHe aEaIQRal 6tf Rehctes cseh rC yHe vEmlfEDEeEal Mmmsrf E Hane reeE hemeif6eh ltf D esyrlsHeh rEjetEayfEaIlC teRrgEneh 6tf Rehctes scRH as yHf se 6crIsHeh rC yHe 8WvPGd GPzGd GW aEh OvPu0 NE Hf cse hemeif6eh 6tf Rehctes ate eD6if Goh rE yHe arseEre f Lhf RcdEYeh syeHathS ftrCRneEyte)ces0

2 Hete Df rscyte heytDreayf E Hs r eeE6etlftDehtscsls ate te6f tyeh f Ea hfcj eghYr asr0

2 Hete a te6f tyeh less yHE G(tesclyrs Hghet yHE yHe b4 SdyHs DaCre hce yf 6trDaiCsaD6le extarYqmesyaye hntcyf E aEhqt r fscLlureEysaD6le lft aEaIQrs0

2 Hete yHe b4 S f La te6f tyeh tesclyrhlets ltf D syeHath b4 SdyHs DaCre hce yf HgHDf rscyte R EjeEjdiEscLlureEysaD6le QehcReh j eghHyed6if Goh(f t Dayrx rEyetleleEre0

KeC:
 GEFEDfcs = Selets yf sad6les j HRHate EfyseerRlrRallC6atyf LyHs j f/ f thet rcyllf tDeh 6atyf LyHe J i 6tf Res sify
 i GWOCDr et = i GWtegrsXCeCdret ltf D hayar ase DarEajEeh rCi HeDral Gr starRjs W6trmRes0YHe i HeDral Gr starRjs W6trmRes a hmsmsrf E f LyHe GDetrRE i HeDral Wf Rey00
 b4 S = bndYf Lite6f tyEg
 SPM = Selayme PetReEjage MlleteEre
 # = NEhrRays Lanteh J i



OGYG GRRRehneh barf tayf tC1A	YHs hf RcdEey Has reeE eleRyf ERaIlC sigEeh rC yHe acyHf tneh sigEayf tres rEhRyeh reif j 0 vlerRyf ER sigEeg Has reeE Rattreh fcy rE R D6lrRE j rH	Signature Category
GRRRehneh lft R D6lrRE j rH	6tf Rehctes s6eRlueh rE Ao i FS Paty000	u eir f ctEe NEf tgaERs
NW qv i ov. A. 0	Of Ezu evals YeaD beahet	u eir f ctEe NEf tgaERs
	W6Erf t NEf tgaERi HeDrsy	u eir f ctEe 4 tgaERs
	W6Erf t WeDmflayle NEsxcDeEy i HeDrsy	WHeeC4 tgaERs
	barf tayf tCu aEaget 74 tgaERs	



Page : 5 f Loo
 2 f / 4 thet : vu o3o. W,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYM
 Ptf eFy : 9oA V@a l ffcEij ayet W@d6llEg

Laboratory Duplicate (DUP) Report

YHe)calyC R EYf i yetD barfayfC Mc6lRaye telets yf a taEnfDlC seleReh rEYalarfayfC s6lno barfayfC hc6lRaves 6lRmhe rEIf tDayf E tegathrEg DeyfH h 6teRstf E aEh sad6le H6yefr geEnyO YHe 6etDnyeh taEges lft yE Selayme PetReY MemmYf E 6PM(fL barfayfC Mc6lRaves ate s6eRtueh rE 6oW u eyf h J2 NvO6P1 aeh ate hebeEheY f E yE DagEycHe fL tesclys rE R D6atrf E yf yE lemel fL te6f tyEg: Sescly < o. yDes b4 S: Of bDnykSesclyrej eeEo. aEnA. yDes b4 S: . % 7. . %kSescly> A. yDes b4 S: . % 7A. %0

Vcr 7u ayfx: WATER

Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Method/Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EV056P: Axc6mby by PC Tntrector (QC Lot: 5+6+0+F2)									
vu o3o. V3o7. . o	GEF ECD fcs	vM. 5V7P: z Ohtf xime Gl/ allEYcAs i ai 45	Mu 4 7Ao. 7. . o	0	Dgph	<0	<0	. 0	Of bDny
		vM. 5V7P: i atrf Eaye Gl/ allEYcAs i ai 45	51oA75A7	0	Dgph	<0	<0	. 0	Of bDny
		vM. 5V7P: BrRatr f Eaye Gl/ allEYcAs i ai 45	Vo7. A75	0	Dgph	oAA	oAo	o0	. % 7A. %
		vM. 5V7P: Yf yel Gl/ allEYcAs i ai 45	7777	0	Dgph	oAA	oAo	o0	. % 7A. %
vu o3o. W17. . o	GEF ECD fcs	vM. 5V7P: z Ohtf xime Gl/ allEYcAs i ai 45	Mu 4 7Ao. 7. . o	0	Dgph	<0	<0	. 0	Of bDny
		vM. 5V7P: i atrf Eaye Gl/ allEYcAs i ai 45	51oA75A7	0	Dgph	<0	<0	. 0	Of bDny
		vM. 5V7P: BrRatr f Eaye Gl/ allEYcAs i ai 45	Vo7. A75	0	Dgph	oAA	oAo	. 0	. % 7A. %
		vM. 5V7P: Yf yel Gl/ allEYcAs i ai 45	7777	0	Dgph	oAA	oAo	. 0	. % 7A. %
EV041) : GS6tcte (TSbrdth etrn2cDGO4 f - by VA (QC Lot: 5+68F892)									
vu o3o. V3o7. . o	GEF ECD fcs	vM. 3ol : Wclaye as W4 3 7Yctr rhnD eyfR	o31. 17@1	0	Dgph	5T1.	5T1.	. 0A	. % 7A. %
vu o3o. V. 17. . o	GEF ECD fcs	vM. 3ol : Wclaye as W4 3 7Yctr rhnD eyfR	o31. 17@1	0	Dgph	<0	<0	. 0	Of bDny
EV048) : Ch6brnte Vrñ rete cnc7Der (QC Lot: 5+68F862)									
vu o3o. V3o7. . o	GEF ECD fcs	vM. 3. i : i Hf time	oT11V7. 7T	0	Dgph	o. A. .	o. A. .	. 0 V	. % 7A. %
vu o3o. V. 17. . o	GEF ECD fcs	vM. 3. i : i Hf time	oT11V7. 7T	0	Dgph	oA5.	oAT.	A0	. % 7A. %
EV0F5a: VrñDo7ved Mcjor Cctmnd (QC Lot: 5+68F882)									
vu o3o. V3o7. . o	GEF ECD fcs	vM. 6F: i alR6D	V33. 7V. 7A	0	Dgph	o. . .	@3	A0	. % 7A. %
		vM. 6F: u agEes6D	V35@73	0	Dgph	. V6	. 1	A6	. % 7A. %
		vM. 6F: W h6D	V33. 7A57.	0	Dgph	. 3T.	. 5T.	o@	. % 7A. %
		vM. 6F: Pf yassr6D	V33. 7. 6V	0	Dgph	A.	o@	. 0	Of bDny
		vM. 6F: i alR6D	V33. 7V. 7A	0	Dgph	35	35	. 0	. % 7A. %
		vM. 6F: u agEes6D	V35@73	0	Dgph	oA	oA	. 0	. % 7. . %
		vM. 6F: W h6D	V33. 7A57.	0	Dgph	o. . .	o. . .	. 0	. % 7A. %
		vM. 6F: Pf yassr6D	V33. 7. 6V	0	Dgph	A1	A1	. 0	. % 7A. %
E) 0f 0a: VrñDo7ved Metc7D by ICP-MS (QC Lot: 5+694f 02)									
vu o3o. V3o7. . o	GEF ECD fcs	vI. A. GF: u aEgaEese	V35@7.	. 0. 0	Dgph	. 0. V	. 0. V	. 0	Of bDny
		vI. A. GF: W E	V35@7	. 0.	Dgph	<. 0.	<. 0.	. 0	Of bDny
		vI. A. GF: u aEgaEese	V35@7.	. 0. 0	Dgph	. 0. 5	. 0. 5	. 0	Of bDny
		vI. A. GF: W E	V35@7	. 0.	Dgph	<. 0.	<. 0.	. 0	Of bDny
E) 081) : aerroSD Iron by Vrñ rete Anc7Der (QC Lot: 5+698152)									
vu o3o. W. 7. . o	J i 3	vI. . . ol : Fettr cs W E	7777	. 0.	Dgph	<. 0.	<. 0.	. 0	Of bDny
vu o3o. 1W7. . o	GEF ECD fcs	vI. . . ol : Fettr cs W E	7777	. 0.	Dgph	. 0A	<. 0.	130T	Of bDny
EK088) : AI l onro cDN by Vrñ rete Anc7Der (QC Lot: 5+649182)									
vu o3o. V5A7. . o	GEF ECD fcs	vK. . . l : GDDf Eas o	VTT37o7V	. 0. 0	Dgph	. 0.	. 0.	. 0	Of bDny
vu o3o. W17. . 3	GEF ECD fcs	vK. . . l : GDDf Eas o	VTT37o7V	. 0. 0	Dgph	o0T@	o0TA	30A	. % 7A. %
EK086) : Nitrrite cDN by Vrñ rete Anc7Der (QC Lot: 5+68F8+2)									



Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP086) : Nitrite cDN by Vrñi rete AncÿDer (QC Lot: 5+68F8+2 - i ontmSed									
vu o3o. V3o7. 0	GEF ECD f cs	vK., V. : Ontps as O	7777	. 0 0	Dgph	. 0 0	. 0 0	. 0	Of brDy
vu o3o. V. 17. 0	GEF ECD f cs	vK., V. : Ontps as O	7777	. 0 0	Dgph	. 0 0	. 0 0	. 0	Of brDy
EP08F) : Nitrite pSDNircte cDN (NOx2 by Vrñi rete AncÿDer (QC Lot: 5+649142									
vu o3o. V5A7. 0	GEF ECD f cs	vK., @ : Ontps w Ontps as O	7777	. 0 0	Dgph	. 0 V	. 0 V	. 0	Of brDy
vu o3o. VV7. 3	GEF ECD f cs	vK., @ : Ontps w Ontps as O	7777	. 0 0	Dgph	. 0 1	. 0 1	. 0	Of brDy
EP09+ : CSürte cDGO5 f - (QC Lot: 5+649f f2									
vu o3o. VV. 7. 0	Ji 3	vK. 1T: Wcllye as W4 5 A7	o3AT, 73, 75	A	Dgph	<A	<A	. 0	Of brDy
EP055: C1 - C4 | ydroi crbon) cDeD (QC Lot: 5+69+442									
vu o3o. V57. AA	GEF ECD f cs	vP. 55: u eyH eEe	V371A71	o.	µgph	50A.	55A.	T08	. % 7A. %
vu o3o. 1A07. A	GEF ECD f cs	vP. 55: u eyH eEe	V371A71	o.	µgph	V0@	V., .	. 0	. % 7A. %
EP090g61: Totc7Petro7SI | ydroi crbonD (QC Lot: 5+649+F2									
vu o3o. TAT7. Ao	GEF ECD f cs	vP. 1. : i T7i @FtaRyE	7777	A.	µgph	<A	<A	. 0	Of brDy
vu o3o. V1@. @	GEF ECD f cs	vP. 1. : i T7i @FtaRyE	7777	A.	µgph	<A	<A	. 0	Of brDy
EP090g61: Totc7Petro7SI | ydroi crbonD (QC Lot: 5+6+1452									
vu o3o. V. 17. 0	GEF ECD f cs	vP. V0: i o. 7i A1 FtaRyE	7777	o. .	µgph	AA	A3.	V08	Of brDy
		vP. V0: i o. 7i o3 FtaRyE	7777	. .	µgph	<. .	<. .	. 0	Of brDy
		vP. V0: i A@7i 5T FtaRyE	7777	. .	µgph	1.	1.	. 0	Of brDy
EP090g61: Totc7Rei overcb7e | ydroi crbonD - NEPM f 015 arci ttronD (QC Lot: 5+649+F2									
vu o3o. TAT7. Ao	GEF ECD f cs	vP. 1. : i T7i o. FtaRyE	i T_ j o.	A.	µgph	<A	<A	. 0	Of brDy
vu o3o. V1@. @	GEF ECD f cs	vP. 1. : i T7i o. FtaRyE	i T_ j o.	A.	µgph	A	A	. 0	Of brDy
EP090g61: Totc7Rei overcb7e | ydroi crbonD - NEPM f 015 arci ttronD (QC Lot: 5+6+1452									
vu o3o. V. 17. 0	GEF ECD f cs	vP. V0: > i o. 7i oT FtaRyE	> i o. _ j oT	o. .	µgph	<o. .	<o. .	. 0	Of brDy
		vP. V0: > i oT 7i 53 FtaRyE	7777	o. .	µgph	A@	50.	T0V	Of brDy
		vP. V0: > i 53 7i 3. FtaRyE	7777	o. .	µgph	<o. .	<o. .	. 0	Of brDy
EP090: / TEBN (QC Lot: 5+649+F2									
vu o3o. TAT7. Ao	GEF ECD f cs	vP. 1. : BeE; eEe	V0757A	o	µgph	<o	<o	. 0	Of brDy
		vP. 1. : Yf lceEe	o. 171175	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : vYOr eE; eEe	o. . 73073	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : Deÿ7& 6ataXDeEe	o. 175175	A	µgph	<A	<A	. 0	Of brDy
			o. T3A75	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : ftyH XDeEe	@ 73V7T	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : Oa6tYaleEe	@ 7A. 75	,	µgph	<. .	<. .	. 0	Of brDy
		vP. 1. : BeE; eEe	V0757A	o	µgph	<o	<o	. 0	Of brDy
		vP. 1. : Yf lceEe	o. 171175	A	µgph	T	T	. 0	Of brDy
		vP. 1. : vYOr eE; eEe	o. . 73073	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : Deÿ7& 6ataXDeEe	o. 175175	A	µgph	3	5	. 0	Of brDy
			o. T3A75	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : ftyH XDeEe	@ 73V7T	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : Oa6tYaleEe	@ 7A. 75	,	µgph	<. .	<. .	. 0	Of brDy
		vP. 1. : BeE; eEe	V0757A	o	µgph	<o	<o	. 0	Of brDy
		vP. 1. : Yf lceEe	o. 171175	A	µgph	T	T	. 0	Of brDy
		vP. 1. : vYOr eE; eEe	o. . 73073	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : Deÿ7& 6ataXDeEe	o. 175175	A	µgph	3	5	. 0	Of brDy
			o. T3A75	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : ftyH XDeEe	@ 73V7T	A	µgph	<A	<A	. 0	Of brDy
		vP. 1. : Oa6tYaleEe	@ 7A. 75	,	µgph	<. .	<. .	. 0	Of brDy



Page : f Loo
 2 f t / 4 thet : vu o3o. W,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYM
 Ptf eFy : 9oA V@a l f cEij ajet W@d6lIEg

Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP1f8v: aSI nXentD (QC Lot: 5+6+0f 42)									
vu o3o. W, 7. 0	Ji 3	v PoA : oA\MRHf tf 6if 6aEe	V17V7,	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : R5 7o5\MRHf tf 6if 6OeEe	o. To7. o7,	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : yaES 7o5\MRHf tf 6if 6OeEe	o. To7. A7	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : oA\mM tf Df eyhEe Q MB(	o. T7@73	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
EP1f8E: | c7oXencted A7phctm Col. poSndD (QC Lot: 5+6+0f 42)									
vu o3o. W, 7. 0	Ji 3	v PoA : z exaRHf tf rcghæEe	1V7175	. 0.3	µgφ	<. 0.3	<. 0.3	. 0	Of bDy
		v PoA : i atrf E YexaRHf tme	, T7A57,	. 0,	µgφ	<. 0,	<. 0,	. 0	Of bDy
		v PoA : YirRHf tf eyhEe	V@. o7T	. 0,	µgφ	oA0	oA0	o00	. % 7A. %
		v PoA : YexaRHf tf eyhEe	oAV7o173	. 0,	µgφ	15,	V@@@	303	. % 7A. %
		v PoA : o0\MRHf tf eyhEe	V. 75. 73	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : yaES 7o5\MRHf tf eyhEe	o. T7T. 7.	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : o0\MRHf tf eyhEe	V. 75375	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : R5 7o5\MRHf tf eyhEe	o. T7. @A	. 0	µgφ	T. 5	TV@@	50f	. % 7A. %
		v PoA : oA\MRHf tf eyhEe	o. V7. T7A	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : o0o7\irRHf tf eyhEe	Vo7. , T1	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : oA\MRHf tf eyhEe QcD R5 & yaES(	7777	. 0	µgφ	T. 5	TV@@	50@	. % 7A. %
		v PoA : oA\mM tf Df 75RHf tf 6if 6aEe	@7oA71	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : p1ED RHf tme	V. 7. o73	. 5	µgφ	<. 5	<. 5	. 0	Of bDy
		v PoA : MRHf tf h1lcf tf DeyhEe	V. 7o671	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : Bif Df DeyhEe	V37157@	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : i Hf tf eyhEe	V. 7. 75	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : YirRHf tf llcf tf DeyhEe	V. T1@3	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : Bif Df RHf tf DeyhEe	V37@7,	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : MRHf tf DeyhEe	V. 7. @A	o0	µgφ	<00	<00	. 0	Of bDy
EP1f8a: | c7oXencted A7ol ctm Col. poSndD (QC Lot: 5+6+0f 42)									
vu o3o. W, 7. 0	Ji 3	v PoA : A7 Hf tf yf ceEe	@73@1	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : 37 Hf tf yf ceEe	o. T3573	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : oA037\irRHf tf re; eEe	oA. 71A7o	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : oA037\irRHf tf re; eEe	1V71o7T	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : YirRHf tf re; eEes Q7cD (	7777	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : i Hf tf re; eEe	o. 17@7V	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : Bif Df re; eEe	o. 1717o	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : o5\MRHf tf re; eEe	, 3o7o57o	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : o5\MRHf tf re; eEe	o. T317V	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : oA\MRHf tf re; eEe	@7. , 7o	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : BeE. GRHf tme	o. . 733V	. 0A	µgφ	<. 0A	<. 0A	. 0	Of bDy
EP1f8) : Trrhc7ol ethcneD (QC Lot: 5+6+0f 42)									
vu o3o. W, 7. 0	Ji 3	v PoA : i Hf tf fD	TV7175	. 0	µgφ	o05	o01	30T	. % 7. , %
		v PoA : Bif Df h1RHf tf DeyhEe	V. 7AV73	. 0	µgφ	<. 0	<. 0	. 0	Of bDy
		v PoA : M1r tf Df RHf tf DeyhEe	oA37317o	. 0	µgφ	<. 0	<. 0	. 0	Of bDy



Page : Tf Loo
 2 f / 4 thet : vu o3o. W,
 i lreEy : Gvi vOp 4 Ou v OY Gb PYU bYM
 Ptf eFy : 9oA, VCA l ffcEhj ajet W&D6llEG

Wcr 7u ayix: WATER

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP1f8) : Trnhc7ol ethcneD (QC Lot: 5+6+0f42 - i ontmSed										
vu o3o. W, 7. 0	J i 3		v PoA : Btf Df lf tD	V, 7A, 7A	. 0.	µgφ	<. 0.	<. 0.	. 0	Of bDny
			v PoA : Yf jal YtrHalf DeyH&Ees	7777	. 0.	µgφ	o05	o01	305	. % 7, . %



Page : 1 f LOO
 2 f / 4 thet : vu o3o. VV,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYM
 Ptf eFy : 9oA V@a l f cEhij ayet W@d6llEG

Method Blank (MB) Report		Laboratory Control Spike (LCS) Report	
Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)
Result	Concentration	LCS	Low High
Method: Compound			
EP090g61: Totc7Rei overcb7e | ydroi rcbond - NIEPM f 015 arci trand (QC Lot: 5+649+F2 - I ontmSed			
V.P. 1.: i T7i o. FtaRyE	µgph	3. . µgph	1. 0f T, oA
EP090g61: Totc7Rei overcb7e | ydroi rcbond - NIEPM f 015 arci trand (QC Lot: 5+6+1452			
V.P. Vo: >1 o. 7i oT FtaRyE	µgph	, V, 5 µgph	V, 0f , 5 oA@
V.P. Vo: >1 oT 7i 53 FtaRyE	µgph	A3, oT µgph	1A3 , T o5A
V.P. Vo: >1 53 7i 3. FtaRyE	µgph	1A1 µgph	T. 03 , o o5V
EP090: / TEBN (QC Lot: 5+649+F2			
V.P. 1.: BeE; eEe	µgph	A µgph	0A VT oA
V.P. 1.: YficeEe	µgph	A µgph	0A VT oA3
V.P. 1.: vYDr eE; eEe	µgph	A µgph	0A VA oA3
V.P. 1.: Dey7 & 6ata7OeEe	µgph	3. µgph	0A VA o5.
V.P. 1.: ftyF 7OeEe	µgph	A µgph	V, oAV
V.P. 1.: Oa6YaleEe	µgph	, µgph	Vo oA@
EP1f8V: aSl nXcntD (QC Lot: 5+6+0f 42			
V.PoA: oAYMRHf tf 6f 6aEe	µgph	o µgph	V@ oA
V.PoA: R57o57MRHf tf 6f 6OeEe	µgph	o µgph	V@ oAo
V.PoA: yAeS7o57MRHf tf 6f 6OeEe	µgph	o µgph	110f V@ oo@
V.PoA: oAYMRHf tf Df eyAeE Q MB(	µgph	o µgph	o. o VT oA
EP1f8E: | c7OXencted A7phnctm Col poSndD (QC Lot: 5+6+0f 42			
V.PoA: MRHf tf hllcf tf DeyAeE	µgph	o µgph	0f VT oAA
V.PoA: pIEO RHf tme	µgph	o µgph	0f 1o oA@
V.PoA: Bf Df DeyAeE	µgph	o µgph	#, 50A T. o55
V.PoA: i Hf tf eyAeE	µgph	o µgph	0f TV o5V
V.PoA: YfRf tf llcf tf DeyAeE	µgph	o µgph	0f Vo oA
V.PoA: oAYMRHf tf eyAeE	µgph	o µgph	0f V@ oo@
V.PoA: MRHf tf DeyAeE	µgph	7777	7777 7777
V.PoA: yAeS7o57MRHf tf eyAeE	µgph	o µgph	0f 1T oo3
V.PoA: oAYMRHf tf eyAeE	µgph	o µgph	0f 1, ooV
V.PoA: R57o57MRHf tf eyAeE	µgph	o µgph	0f 13 ooT
V.PoA: Bf Df Rf tf DeyAeE	µgph	o µgph	0f W oAV
V.PoA: oAYMRHf tf eyAeE	µgph	o µgph	0f V1 oA3
V.PoA: oAYMRHf tf eyAeE	µgph	o µgph	0f 1, oo5
V.PoA: i atr f E YexARHf tme	µgph	o µgph	0f 1o ooV
V.PoA: YfRf tf eyAeE	µgph	o µgph	o, 1A oA
V.PoA: YexARHf tf eyAeE	µgph	o µgph	oo3 VA oA3
V.PoA: z exARHf tf r cYhneEe	µgph	o µgph	0f To o3,
V.PoA: oAYMRHf tf eyAeE QcD R5 & yAeS(	µgph	7777	7777 7777
V.PoA: oAYMRHf tf 7o7Rf tf 6f 6aEe	µgph	o µgph	o. T V3 o5.



Page : 001
 2 f / 4 thet : vu o3o. VV,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYM
 Ptf eFy : 9oA V0A l ffcEij ayet WdD6lIEg

Method: Compound				Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Result	Concentration	Spike Recovery (%)	LCS	Low	High	
EP1f8a: | c0Xenected Arol ctim Col poSndC (QCLot: 5+6+0f42												
Vu o3o. V3o7. A	GEFEDfcs	vM. 3. ol : Wblaye as W4. 3 Yctr mtdEytR	o. 17@7V	. 0	µgph	<. 0.	o µgph	@B	1@	1@	o05	
Vu o3o. V3o7. o	GEFEDfcs	vM. 3. ol : i Hf tme	o. 17170	. 0	µgph	<. 0.	o µgph	1A	V@	V@	oA5	
E) 0f0a: VrdDo7ved Metc7Dby ICP-MG (QCLot: 5+694f02			o. . 7337V	. 0A	µgph	<. 0A	o µgph	@B	TA	TA	oA3	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	, 3o7@570	. 0	µgph	<. 0.	o µgph	@Q	1,	1,	o05	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	o. T317V	. 0	µgph	<. 0.	o µgph	@J	VV	VV	oA	
E) 081: aerroSDIron by Vrd rete Anc7Der (QCLot: 5+698152			@. 7. . 70	. 0	µgph	<. 0.	o µgph	@J	1@	1@	o05	
Vu o3o. V5A7. . A	GEFEDfcs	vK. . . l : GDfEas O	@. 73@1	. 0	µgph	<. 0	o µgph	@J	VV	VV	oA0	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	o. T3573	. 0	µgph	<. 0	o µgph	@Q	V,	V,	oA5	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	oA 71A70	. 0	µgph	<. 0	o µgph	@B	1,	1,	oo,	
E) 088: AI l omr cDN by Vrd rete Anc7Der (QCLot: 5+649182			1V7o7T	. 0	µgph	<. 0	o µgph	@B	V3	V3	oAT	
Vu o3o. V5A7. . A	GEFEDfcs	vK. . . l : GDfEas O	7777	. 0	µgph	<. 0	7777	7777	7777	7777	7777	
EP1f8) : Trnc7Dl ethcneD (QCLot: 5+6+0f42												
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	TV7175	. 0	µgph	<. 0.	o µgph	@B	1.	1.	oA	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	V. 7A73	. 0	µgph	<. 0.	o µgph	o. .	V@	V@	oAA	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	oA373170	. 0	µgph	<. 0.	o µgph	o. A	VV	VV	oAV	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	V. 7A. 7A	. 0	µgph	<. 0.	o µgph	o. o	VT	VT	oAA	
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	7777	. 0	µgph	<. 0.	7777	7777	7777	7777	7777	

Matrix Spike (MS) Report

Yhe) callC REyf l yetD u aytx W6le Q W telets y aE rEyalarf taytC s6lry sad6le s6lreh j nH a te6tesEayme sey fL yatgey aEalQes0 Yhe 6ctf6se fL yHs Ji 6ataDeyt rs y DfEyft 6fyEyal Daytx elleR5 f E aEalQe teR netres0WayRSeR netCbnDys as 6et larf taytCMaya J callC4 r eRyres QMU 4 s(0Nneal teR netCiaEges s6yeh DaCre j ameh rE yhe emEYf Lsad6le Daytx rE6tleteER0

Vbr 7u aytx: WATER

Method: Compound				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	MS
EV041) : GSTcte (TSbrndln etrn2cDGO4 f - by VA (QCLot: 5+68F892							
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : Wblaye as W4. 3 Yctr mtdEytR	o31. 17@1	o. Dgph	# Of y MeytDfesh	V.	o5.
EV048) : Ch7brnde Vrd rete cnc7Der (QCLot: 5+68F862							
Vu o3o. V3o7. . A	GEFEDfcs	vM. 3. ol : i Hf tme	oT11V7. . 7T	3. . Dgph	# Of y MeytDfesh	V.	o5.
E) 0f0a: VrdDo7ved Metc7Dby ICP-MG (QCLot: 5+694f02							
Vu o3o. V3o7. o	GEFEDfcs	vM. 3. ol : i Hf tme	V35@7,	. 03 Dgph	oo.	T3	o53
E) 081: aerroSDIron by Vrd rete Anc7Der (QCLot: 5+698152							
Vu o3o. 1. o7. T	GEFEDfcs	vM. . . ol : Fettfcs NF E	7777	A Dgph	1, 0l	V.	oA1
E) 088: AI l omr cDN by Vrd rete Anc7Der (QCLot: 5+649182							
Vu o3o. V5A7. . A	GEFEDfcs	vK. . . l : GDfEas O	VTT373o7V	o0 Dgph	o. A	V.	o5.



Page : o. f Loo
 2 f t / 4 thet : vu o3o. VV,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYm
 Ptf eRy : 9oA V@a l ff cEij ayet W@d6llEG

Vbr 7u ayix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Recovery Limits (%)	Recovery Limits (%)
EK086) : Nitrite cDN by Vrii rete AncyDer (QCLot: 5+68F8+2						
vu o3o. V3o7. A	GEFEDfcs	vK., V.: Oryne as O	7777	. 0 Dgph	1@	oo@
EK08F) : Nitrite pSDNirctc cDN (NOx2 by Vrii rete AncyDer (QCLot: 5+649142						
vu o3o. V5A7. A	GEFEDfcs	vK., @.: Oryne wOrytaye as O	7777	. 0 Dgph	@0A	o5.
EP055: C1 - C4 | ydroi crbon) cDeD (QCLot: 5+69+442						
vu o3o. VV, 7. o	Ji 3	vP. 55: ueyBeEe	V371A71	AV@0 µgph	@0B	o5.
EP090g61: Totc7Petro7SI | ydroi crbonD (QCLot: 5+649+F2						
vu o3o. VV, 7. o	Ji 3	vP. 1.: i T7i @FtarYfE	7777	A1. µgph	@0I	35 oA
EP090g61: Totc7Petro7SI | ydroi crbonD (QCLot: 5+6+1452						
vu o3o. 1157. 5	GEFEDfcs	vP. Vo: i o. 7i o3 FtarYfE	7777	5@. µgph	oo3	3. o5.
		vP. Vo: i o. 7i A1 FtarYfE	7777	oV. T µgph	@0T	, o o55
		vP. Vo: i A@7i 5T FtarYfE	7777	1TTA µgph	@0	, A o5.
EP090g61: Totc7Rei overcb7e | ydroi crbonD - NEPM f 015 arci trnD (QCLot: 5+649+F2						
vu o3o. VV, 7. o	Ji 3	vP. 1.: i T7i o. FtarYfE	i T_ j o.	55. µgph	@0A	33 oAA
EP090g61: Totc7Rei overcb7e | ydroi crbonD - NEPM f 015 arci trnD (QCLot: 5+6+1452						
vu o3o. 1157. 5	GEFEDfcs	vP. Vo: > i o. j oT	> i o. j oT	, V, 5 µgph	V0A	3T o3A
		vP. Vo: > i oT 7i 53 FtarYfE	7777	A3, oT µgph	o. 1	, A o3o
		vP. Vo: > i 53 7i 3. FtarYfE	7777	1A1 µgph	V10	3@ o35
EP090: / TEBN (QCLot: 5+649+F2						
vu o3o. VV, 7. o	Ji 3	vP. 1.: BeE, eEe	Vo7357A	A µgph	oA	T1 o5.
		vP. 1.: YficeEe	o. 171173	A µgph	ooT	VA o5A

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

Yhe) calyC fEYf l yetD u ayix W6ite @ W aEh u ayix W6ite @ W(telets y fEYalar ftaf tC s6lly saD6les s6lly h j nH a te6teseeJayme sey f L yagey aEalQes0 Yhe 6ct6f se f L yHese Ji 6ataDejets ate yf DfEYf t 6f yEajal Dayix elleR6s f EaeIQe teR netres0WayRSeR netC6bDns as 6et lar ftaf tC Waja J calyC4 r eRyimes 0U 4 s0Nheal teR netCtaEges syajeh DaCr e j ameh IE yHe eneEYf LsaD6le Dayix fEjetleERe0

Vbr 7u ayix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike Concentration	Recovery Limits (%)	Recovery Limits (%)	Recovery Limits (%)	RPDs (%)	Control Limit
EK08F) : Nitrite pSDNirctc cDN (NOx2 by Vrii rete AncyDer (QCLot: 5+649142									
vu o3o. V5A7. A	GEFEDfcs	vK., @.: Oryne wOrytaye as O	7777	. 0 Dgph	@0A	V.	o5.	7777	7777
EK088) : AI l onna cDN by Vrii rete AncyDer (QCLot: 5+649182									
vu o3o. V5A7. A	GEFEDfcs	vK., l.: GDFEa as O	V71373o7V	oo Dgph	o. A	V.	o5.	7777	7777
EP090g61: Totc7Petro7SI | ydroi crbonD (QCLot: 5+649+F2									
vu o3o. VV, 7. o	Ji 3	vP. 1.: i T7i @FtarYfE	7777	A1. µgph	@0I	35	oA	7777	7777
EP090g61: Totc7Rei overcb7e | ydroi crbonD - NEPM f 015 arci trnD (QCLot: 5+649+F2									
vu o3o. VV, 7. o	Ji 3	vP. 1.: i T7i o. FtarYfE	i T_ j o.	55. µgph	@0A	33	oAA	7777	7777



Page : 00 f Loo
 2 f / 4 thet : vu o3o. VV,
 i lreEy : Gvi vOp184 Ou vOYGb PYU bYM
 Ptf eFy : 9oA, V@a l f f cEhij ayet W@d6llEG

Wcr 7u ayix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High		Value
EP090: / TEBN (QCLOT: 5+649+PZ)										
vu o3o. VV, 7. 0	J i 3		V67357A	A. µgφ	oA	7777	T1	o5.	7777	7777
			o. 171178	A. µgφ	ooT	7777	VA	o5A	7777	7777
EK086) : Nitrite cDN by Vrñi rete AncyDær (QCLOT: 5+68F8+2)										
vu o3o. V3o7. A	GEFED f cs	vK. , V : Onjnye as O	7777	. 0 Dgφ	1@	7777	VW	oo@	7777	7777
EV048) : Ch7brñde Vrñi rete cnc7yDær (QCLOT: 5+68F862)										
vu o3o. V3o7. A	GEFED f cs	vM. 3. l : i Hfthe	oT11V7. 7T	3. . Dgφ	# Of y MøjetD fEeh	7777	V.	o5.	7777	7777
EV041) : GS7cte (TSbrñññ etrñ2cDGO4 f - by VA (QCLOT: 5+68F892)										
vu o3o. V3o7. A	GEFED f cs	vM. 3o1 : Wclaye as V4 3 7Yctr ññD eyfr	o31. 17V@	o. Dgφ	# Of y MøjetD fEeh	7777	V.	o5.	7777	7777
EP090φ61: Toic7Petro7SI | ydroi rbonD (QCLOT: 5+6+1452)										
vu o3o. 1157. 5	GEFED f cs	vP. Vo: i o. 7i o3 FtaRME	7777	5@. µgφ	oo3	7777	3.	o5.	7777	7777
		vP. Vo: i o. 7i A1 FtaRME	7777	oV. T µgφ	@T	7777	, o	o55	7777	7777
		vP. Vo: i A@7i 5T FtaRME	7777	1TTA µgφ	@@	7777	, A	o5,	7777	7777
EP090φ61: Toic7Rei overcb7e | ydroi rbonD - NEPM f 015 arci tññD (QCLOT: 5+6+1452)										
vu o3o. 1157. 5	GEFED f cs	vP. Vo: > i o. 7i oT FtaRME	> i o. _i oT	. V, 5 µgφ	VWA	7777	3T	o3A	7777	7777
		vP. Vo: > i oT 7i 53 FtaRME	7777	A3, oT µgφ	o. 1	7777	, A	o3o	7777	7777
		vP. Vo: > i 53 7i 3. FtaRME	7777	1A1 µgφ	V10	7777	3@	o35	7777	7777
E) Of 0a: VrñDo7ved Metc7D by ICP-MS (QCLOT: 5+694f 02)										
vu o3o. V3o7. 0	GEFED f cs	vI. . A. GF: u aEgaEese	V35@@@7.	. 08 Dgφ	oo.	7777	T3	o53	7777	7777
E) 081) : aerroSD Iron by Vrñi rete AncyDær (QCLOT: 5+698152)										
vu o3o. 1. o7. T	GEFED f cs	vI. . , ol : Fettf cs ññE	7777	ADgφ	1, 0	7777	V.	oA1	7777	7777
EP055: C1 - C4 | ydroi rbon) cDæD (QCLOT: 5+69+442)										
vu o3o. VV, 7. 0	J i 3	vP. 55: u eyBEE	V371A7I	AV@µgφ	@B	7777	V.	o5.	7777	7777



Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EM1410775	Page	: 1 of 8
Client	: AEC ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR GREG NIELD	Contact	: Steven McGrath
Address	: 12 Greenhill Road, Wayville, SA, 5034 PO Box 582 UNLEY SA, AUSTRALIA 5061	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: greg.nield@greencap.com.au	E-mail	: steven.mcgrath@alsenviro.com
Telephone	: +61 08 8299 9955	Telephone	: +61-3-8549 9600
Facsimile	: +61 08 8362 9776	Facsimile	: +61-3-8549 9601
Project	: J125792 Groundwater Sampling	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: 37-41 Cliff Street, Glenelg Ea	Date Samples Received	: 15-OCT-2014
C-O-C number	: ----	Issue Date	: 22-OCT-2014
Sampler	: GN	No. of samples received	: 1
Order number	: 48083-GN	No. of samples analysed	: 1
Quote number	: AD/035/13 V2		

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



Page : 2 of 8
 Work Order : EM1410775
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Analysis Holding Time Compliance

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

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

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

Matrix: **WATER**

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

Method	Container / Client Sample ID(s)	Sample Date		Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Date analysed	Due for analysis	Evaluation	Evaluation
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)	QC4	---	27-OCT-2014	17-OCT-2014	27-OCT-2014		✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)	QC4	---	10-NOV-2014	17-OCT-2014	10-NOV-2014		✓
ED045G: Chloride Discrete analyser							
Clear Plastic Bottle - Natural (ED045G)	QC4	---	10-NOV-2014	17-OCT-2014	10-NOV-2014		✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F)	QC4	---	20-OCT-2014	20-OCT-2014	20-OCT-2014		✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)	QC4	---	11-APR-2015	20-OCT-2014	11-APR-2015		✓
EG051G: Ferrous Iron by Discrete Analyser							
Clear Plastic Bottle - HCl - Filtered (EG051G)	QC4	---	---	20-OCT-2014	20-OCT-2014		✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)	QC4	---	10-NOV-2014	20-OCT-2014	10-NOV-2014		✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)	QC4	---	15-OCT-2014	15-OCT-2014	15-OCT-2014		✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)	QC4	---	10-NOV-2014	17-OCT-2014	10-NOV-2014		✓
EK086: Sulfite as SO3 2-							
Clear Plastic Bottle - EDTA/Zinc Acetate (EK086)	QC4	---	---	15-OCT-2014	15-OCT-2014		✓
EP033: C1 - C4 Hydrocarbon Gases							
Clear glass VOC vial - HCl (EP033)	QC4	---	---	20-OCT-2014	27-OCT-2014		✓



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 Work Order : EM1410775
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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

Method	Sample Date	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Evaluation	Due for analysis
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
Amber Glass Bottle - Unpreserved (EP071) QC4	13-OCT-2014	17-OCT-2014	20-OCT-2014	✓	26-NOV-2014
EP080: BTEXN					
Clear glass VOC vial - HCl (EP080) QC4	13-OCT-2014	16-OCT-2014	27-OCT-2014	✓	27-OCT-2014
EP080/071: Total Petroleum Hydrocarbons					
Clear glass VOC vial - HCl (EP080) QC4	13-OCT-2014	16-OCT-2014	27-OCT-2014	✓	27-OCT-2014
EP125D: Fumigants					
Clear glass VOC vial - HCl (EP125) QC4	13-OCT-2014	----	----	----	27-OCT-2014
EP125E: Halogenated Aliphatic Compounds					
Clear glass VOC vial - HCl (EP125) QC4	13-OCT-2014	----	----	----	27-OCT-2014
EP125F: Halogenated Aromatic Compounds					
Clear glass VOC vial - HCl (EP125) QC4	13-OCT-2014	----	----	----	27-OCT-2014
EP125G: Trihalomethanes					
Clear glass VOC vial - HCl (EP125) QC4	13-OCT-2014	----	----	----	27-OCT-2014



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: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Evaluation
Analytical Methods		QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Alkalinity by PC Titrator	ED037-P	2	20	10.0	10.0	✓
Ammonia as N by Discrete analyser	EK055G	2	20	10.0	10.0	✓
C1 - C4 Gases	EP033	2	20	10.0	10.0	✓
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✓
Ferrous Iron by Discrete Analyser	EG051G	2	20	10.0	10.0	✓
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	✓
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.5	10.0	✓
Nitrite as N by Discrete Analyser	EK057G	2	18	11.1	10.0	✓
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓
Sulfite as SO3 2-	EK086	1	1	100.0	10.0	✓
TRH - Semivolatile Fraction	EP071	1	8	12.5	10.0	✓
TRH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓
VOC by HS GCMS in SIM Mode	EP125	1	1	100.0	10.0	✓
Laboratory Control Samples (LCS)						
Alkalinity by PC Titrator	ED037-P	1	20	5.0	5.0	✓
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	✓
C1 - C4 Gases	EP033	1	20	5.0	5.0	✓
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓
Ferrous Iron by Discrete Analyser	EG051G	1	20	5.0	5.0	✓
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.3	5.0	✓
Nitrite as N by Discrete Analyser	EK057G	1	18	5.6	5.0	✓
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓
Sulfite as SO3 2-	EK086	1	1	100.0	5.0	✓
TRH - Semivolatile Fraction	EP071	1	8	12.5	5.0	✓
TRH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓
VOC by HS GCMS in SIM Mode	EP125	1	1	100.0	5.0	✓
Method Blanks (MB)						
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	✓
C1 - C4 Gases	EP033	1	20	5.0	5.0	✓
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	✓
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓
Ferrous Iron by Discrete Analyser	EG051G	1	20	5.0	5.0	✓
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued						
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.3	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Nitrite as N by Discrete Analyser	EK057G	1	18	5.6	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Sulfite as SO3 2-	EK086	1	1	100.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
TRH - Semivolatile Fraction	EP071	1	8	12.5	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
TRH Volatiles/BTEX	EP080	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
VOC by HS GCMS in SIM Mode	EP125	1	1	100.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Matrix Spikes (MS)						
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
C1 - C4 Gases	EP033	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Ferrous Iron by Discrete Analyser	EG051G	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.3	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Nitrite as N by Discrete Analyser	EK057G	1	18	5.6	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
TRH - Semivolatile Fraction	EP071	1	8	12.5	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓
TRH Volatiles/BTEX	EP080	1	20	5.0	5.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement ✓



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrator) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO4 Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
			Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)
			Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020; ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Ferrous Iron by Discrete Analyser	EG051G	WATER	APHA 21st ed., 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ferric Iron - Dissolved	EG053FG-MS	WATER	APHA 21st ed., 3500 Fe-B. The 0.45um filtered Ferric Iron is determined as the difference between Filtered Iron and Filtered Ferrous Iron quantify by ICPMS and Discrete Analyser.
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	APHA 21st ed., 4500-NO2- B. Nitrite is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
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 separately by direct colorimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
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 colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)



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 Work Order : EM1410775
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

Analytical Methods		Method	Matrix	Method Descriptions
Sulfite as SO3 2-	EK086		WATER	In-house. (APHA 21st ed., 4500-SO32- B mod.) Sulfite is determined by standardised Iodate / Iodide titration.
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG		WATER	APHA 21st Ed. 1030F. This method is compliant with NEPM (2013) Schedule B(3)
C1 - C4 Gases	EP033		WATER	Technical Guidance for the Natural Attenuation Indicators: Methane, Ethane, and Ethene, US EPA - Region 1, EPA New England, July 2001. Automated static headspace, dual column GC/FID. A 12 mL sample is pipetted into a 20 mL headspace vial containing 3g of sodium chloride and sealed. Each sample is equilibrated with shaking at 40 degrees C for 10 minutes prior to analysis by GC/FID using a pair of PLOT columns of different polarity.
TRH - 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 the QC requirements of NEPM (2013) Schedule B(3)
TRH 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 the QC requirements of NEPM (2013) Schedule B(3)
VOC by HS GCMS in SIM Mode	EP125		WATER	In-house: A sample is saturated with sodium chloride and achieving thermodynamic equilibrium between the water and gas phase in a closed thermostatted vessel. A reproducible headspace gas is extracted from the vial and injected into a gas chromatograph and the analyte of interest is separated by means of gas/liquid partition chromatography and quantified using automated static headspace GCMS in SIM mode.
Preparation Methods		Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14		WATER	USEPA SW 846 - 3510B 100 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 (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.



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 Work Order : EM1410775
 Client : AEC ENVIRONMENTAL PTY LTD
 Project : J125792 Groundwater Sampling

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 SW.846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP125E: Halogenated Aliphatic Compounds	4410598-001	---	Bromomethane	74-83-9	53.2 %	60-133%	Recovery less than lower control limit
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EM1410741-002	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
ED045G: Chloride Discrete analyser	EM1410741-002	Anonymous	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

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